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AN IMPROVED METHOD OF PREPARING CATGUT LIGATURES.

A PRELIMINARY COMMUNICATION.

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Good ligatures are an essential in surgery. The ideal ligature should be strong, sterile and soft. It should be capable of preservation for a long period of time without loss of strength or sterility. That numerous methods have been devised for the preservation of catgut is evidence of the lack of satisfaction which they give. There are certain requirements for a proper method of preparation: it should be simple, so that an inexperienced person can carry it out; there should be no handling of the gut after sterilization has begun; the ligature should be placed in a single container at the beginning of the process and should not be removed therefrom until it is needed at the operation; the method should be inexpensive.

These conditions are best fulfilled by the Claudius iodine-alcohol method of catgut sterilization, but this method has certain disadvantages: (1) the Claudius gut does not keep well, but becomes fragile and frangible; (2) the alcohol is not a fat solvent, and sterilization cannot be complete unless a good fat solvent is used to wash the fat from the crevices of the gut; (3) the gut is a little hard for manipulation; (4) the alcohol, containing water, swells the gut a trifle in size. Catgut will readily abstract water from alcohol. I have been unable to prepare alcohol by ordinary methods of dehydration, such as calcium carbide or anhydrous copper sulphate, so as to render it so free from water that the catgut will not abstract some little moisture from the solution and so cause it to swell. Columbian spirits (deodorized methyl alcohol) is the best of the alcohols for this purpose.

For these reasons, after considerable experimentation in catgut sterilization, I have adopted the following method of preparing catgut:

I. Iodine 4% in acetone, 8 days.

II. Wash in acetone, 4 days.

III. Preserving solution, acetone 85%, Columbian spirits 10%, glycerine 5%. The glycerine should first be dissolved in the alcohol and then added to the acetone, as acetone itself is not a solvent of glycerine.

This method has the following advantages:

The solutions are fat solvents and antiseptics; the iodine is used in greater strength than in Claudius' method and it impregnates the gut so that the ligatures are black and well saturated with iodine when they are placed in the clear acetone solution. The pure acetone abstracts the excess of iodine from the gut, leaving the gut clear and white. The preserving solution of acetone, alcohol and glycerine completes the bleaching and at the same time softens the gut, which is not much softened by the pure acetone. The latter, however, does not harden the gut, but abstracts the water from it and leaves it of the same flexibility as gut that has been preserved in chloroform, as in the well-known commercial process. The addition of the glycerine and alcohol to the acetone in the preserving solution is sufficient in amount to soften the catgut; at the same time the dehydrating power of the acetone prevents the gut from swelling up, as it does when it is placed in alcohol solution.

Acetone itself is a very strong antiseptic, as is well known from its use in the treatment of inoperable cancer of the uterus. Acetone has also been used in disinfection of the hands by von Herff[1] with good results. He uses equal parts of alcohol and acetone as a hand disinfectant before operations by rubbing the alcohol-acetone mixture into his hands. Bacteriological work with this method of disinfection has been done by Oeri and Phisterer[2] and by Von Heck[3]. The acetone bleaches, tans and softens the gut and increases its tensile strength. I made the first experiments with this liquid in the hope of obtaining a substitute for chromic gut, as I was familiar with the hardening action of acetone on tissue in pathological work; but it was found that, instead of hardening the gut, the acetone softened it. At operation, after the gut has dried, it remains soft.

Acetone is antiseptic and comparatively cheap; it abstracts water and absorbs fat from the gut. Water and fat have no place in perfect catgut—fat means imperfect sterilization, for bacteria may exist

in a mass of fat untouched by the antiseptics; water swells the gut and softens it, and when the gut dries on the instrument table, it becomes hard, as does all rawhide or leather after having been immersed in a watery solution.

The preserving solution of the mixture of acetone, alcohol and glycerine is one which softens the gut, and at the same time does not swell it in size. It it essential that catgut should be as small as possible for perfect surgery. The gut may be preserved in this solution indefinitely. The finally prepared catgut contains but little iodine, and if it is desired to have a catgut containing iodine, as does the Claudius gut, it would be well to transfer the gut from the preserving fluid to one of a similar composition with the addition of ½% of iodine before it is required for use. Catgut cannot be preserved for more than a month in iodine solutions without lessening the strength, on account of the action of the iodine on the gut.

If the iodine solution is not considered satisfactory for sterilization, the catgut may first be boiled in cumol as in the ordinary cumol process, or in paraffin oil over a sand-bath at a temperature of 212° F. and then run up to 300° F., as advised by Bartlett[4], before it is placed in the preserving solution. The gut will be softened as well as if it had been put through the iodine and acetone process here described, but it should be left several days in the preserving solution before use, in order to get soft. Personally, I usually boil the gut as a preliminary in paraffin oil, before placing it in the iodine solution to make assurance doubly sure.

The catgut should be cut in the required lengths and wound in coils with three or four ligatures in a coil and held by wrapping the ends four times around. In this way several ligatures can be taken out at once and less handling is required. The ligatures should be placed in wide-topped glass jars with ground glass tops, and should not be taken out of the jar until required at the operation. Jars 7 inches high and 3 inches across are used, and enough for one operation is placed in each jar. The solution may be poured off without disturbing the gut. The jars are previously boiled. No gut is wasted, as the excess not used in operation may be resterilized without loss in strength. If the jars are required outside the hospital, I usually pour off the solution before packing, in order to lighten the weight. The catgut may be readily picked out of the jar at the time of the operation by means of sterile forceps.

The choice of these solutions was made after extensive investigations in regard to the applicability of various substances and various methods. Carbon tetrachloride was used at first as a solvent of the iodine and as a preservative of the catgut, but the resulting catgut was a trifle hard and the gut deteriorates with time. Chloroform is subject to the same disadvantages, although recommended for this purpose by Burmeister[5]. Acetone is a better antiseptic, a better solvent, and keeps the gut softer. The solution is cheap, costing a little over one dollar per gallon, and it may be used repeatedly. The final cost of the sterilized gut is about a cent a foot.

The choice of the raw gut is of importance, if a good product is desired. The best gut is brown in color; the twists of the gut may be seen, and it is very flexible and strong. White gut, which is bleached by sulphur, seems to get a little harder than the unbleached gut. Gut which is clear and translucent, like violin strings, is not, as a rule, good, for a translucent appearance means that the gelatinous portion of the gut has become firmly coagulated, and if, on pinching the gut between the fingers, a white mark or crack appears it is an evidence that the gut contains a lot of fat and will be hard. The most expensive gut is seldom the best. The best gut I have ever had was rescued in a tangled mass from an old drawer in an instrument shop, where it had lain for years, and it was given to me for nothing.

I have used gut prepared in this way or with carbon tetrachloride for nearly two years with every satisfaction. It is so strong that smaller sizes may be used for the various ligatures, pedicles, etc. It lasts, size for size, one day longer in the tissues than does cumol gut. It has the advantage of containing no water, so that when it is placed in position it abstracts water from the tissues, which swells the gut slightly and tightens the ligature. At the same time the knot does not slip, as is the tendency in gut preserved in alcohol or watery solutions, for the gut swells slightly around the knot to form a firm mortise joint. This may easily be proved by tying the gut around a soft lead pencil and placing it in water: in a short time it will be found to have tightened on the pencil so as to indent the wood, and yet the knot will be perfectly firm. The tendency of knots tied with gut which has been preserved in aqueous solutions to become untied, is well known, especially if the knot is upon an exposed surface such as the mucous membrane of the vagina.

The gut preserved in the acetone solution retains its elasticity, which is not the case with catgut preserved in alcohol or aqueous solutions. No matter what the method of sterilization, whether by cumol,

paraffine or iodine, the acetone-alcohol-glycerine preserving solution offers considerable advantages as a final solution. As before remarked, if it is desired to have the iodine contained in the final solution, it may be added.

This process is the result of the investigations of over fifty methods of preparing catgut, and it is so simple that every surgeon may conveniently prepare his own catgut. The catgut may be stored and kept indefinitely. It is inexpensive as well as simple. It enables smaller sizes of gut to be used with the result that there is less irritation from the size of the foreign body.

Further investigation is in progress in regard to the possibility of using this solution as a preservative of gut in glass tubes.

174 WEST 58TH STREET.

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ON METHODS OF POSTERIOR URETHROSCOPY, WITH A DESCRIPTION OF A NEW CYSTO-URETHROSCOPE.

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The shortcomings of the methods that are employed at the present time for viewing the posterior urethra have induced me to direct my efforts during the past year towards the construction of an instrument by means of which the neck of the bladder and the posterior urethra could be more satisfactorily seen. To Goldschmidt* belongs the credit of having introduced the so-called "irrigation urethroscopy" which, when carried out with the instrument devised by him, unquestionably gives a better picture of the posterior urethra than we had ever been able to obtain before. However, even his innovation has left a great deal to be desired. For, as will be pointed out later on, not only do the structures, brought into view by his instrument, appear considerably distorted by virtue of the very nature of the optical apparatus, but manipulation of the instrument in the urethra can be only imperfectly carried out owing to the traumatism that is so frequently a consequence of its use.

* Goldschmidt: *Berliner Klin. Woch.*, 1906, No. 6.

For a thorough understanding of the essential features of an apparatus which would meet, as nearly as possible, the peculiar requirements of the posterior urethra, it may be well to take a brief survey of the methods used up to the present time. These may be divided into:

1. Direct vision through an endoscopic tube.
2. Direct* vision through a telescope.

The straight endoscopic tube, first introduced by Desormaux in 1865, still finds its usefulness in the posterior urethra. Its deficiencies need hardly be emphasized. An improvement upon this method is to be found in the curved endoscopes of Loewenhardt, Swinburne, Brown and Luys. But these too permit of but a meager inspection of the floor of the posterior urethra.

In 1896 Goldschmidt conceived the idea of employing a telescope which was to be carried in a fenestrated sheath. By distension of the walls of the posterior urethra with fluid, he sought to make the conditions more favorable for obtaining a view of the parts. His telescope carried the original

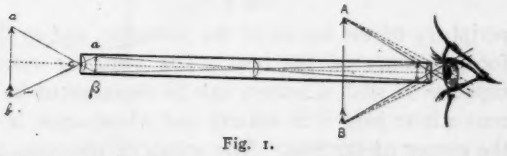


Fig. 1.

Nitze system of lenses and is practically the same as that which is found in the Brenner and Brown cystoscopes.

Let us briefly pass in review the properties of this combination of lenses so that we may have a better understanding of its fitness for the purposes in hand. Enclosed in a narrow tube there are three essential lenses, an objective,* a middle lens and an ocular (Fig. 1). The objective is a strong lens, of very short focal distance, which produces a real inverted image at the distal end of the tube ($a\beta$). The details of this image (which has to float within the tube) are too small to be seen with the naked eye. Lying in the distal end of the tube, it must be brought near to the eye. This is accomplished by the middle lens which simply transplants the first real image to a point where it can be enlarged by the simple lens eyepiece. Thus a virtual image (AB) whose size depends upon the diameter of the lumen of the tube and the strength of the magnifying lens is what is seen as the bright disc, when we hold such a telescope towards the sky. Inasmuch as the field upon which the objective lens looks is brought to a focus

* Two lenses (objective or field lenses) are often employed; for the sake of clearness we speak of only one.
* "Direct" in the sense that the rays from the object take a normal course in passing to the eye, either through an ordinary tube or through a system of lenses; as opposed to "indirect," in which method the rays are deflected 90 degrees by a prism.

within and fills the tube, and inasmuch as the diameter of the tube is constant, the size of the field for any particular distance must vary with the strength of the "eye" lens or ocular. The diameter of the field at any given point is represented by a line in a plane perpendicular to the plane of the axial ray. Such a line constitutes the base of a triangle (acb) whose apex lies at the center of the lens and whose sides are the prolongations of intersecting lines joining conjugate points ($a\beta$) that are situated n the

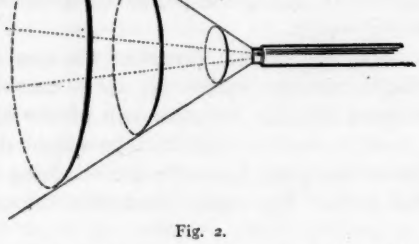


Fig. 2.

periphery of the lumen of the telescope, and at the focal distance of the lens. The vista, or visual capacity of such a system can be represented by a cone whose base is at infinity and whose apex is at the center of the lens. The width of the cone, or "visual angle" increases with the diminution in the focal distance of the lens (Figs. 2 and 3).*

An interesting feature of such a combination of lenses is the fact that the system has practically a universal focus—in other words, images will be clearly seen at whatever distance they may be

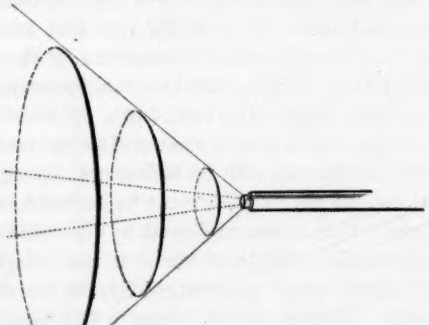


Fig. 3.

placed. Let A (Fig. 4) be a strong convex lens, whose principal focus is at F, 2.5 to 3.5 millimeters from the lens.* According to well-known optical principles, rays emanating from a point situated at a distance of twice that of the principle focus will have their conjugate focus at a point equidistant from the center of the lens. In practice, and for reasons to be given later on, it is not expedient to bring the telescope even as close as once or twice the focal distance of the objective. Hence the differnce in the position of the focus of a field situated at infinity and one brought as close as 2F is at most only equal to once the focal distance (1.25 to 1.75 mm.). The variation in position of the object to be viewed with a cystoscope, is, at most, a few centimeters. We see, therefore, that the changes in the position of the tiny real image are so small as to be negligible; for, when they are transferred to the image as the ocular end of the telescope, the eye can readily accommodate for such very slight alterations in focus.

Another important property of the Nitze lens system will be illustrated by Figure 5, which shows how objects are magnified as they approach the lens. Let O be a telescope, the objective lens of which produces an inverted image $a\beta$ of the field ab (aa, bb in full face view), and acb the visual angle of the

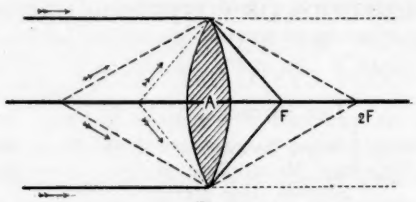


Fig. 4.

system. Given an "eye" lens of such power that the size of the object ab and of the enlarged image or virtual image AB will be identical. In other words, let ab be situated at a point (I) where it appears as large as it really is (ab = AB). At II only a portion a' b' will be seen. This, however, takes up the same space AB and, therefore, will also be seen as large as AB*; therefore, a' b' is equal to A' B'. At III a" b" = A" B"; at IV a"' b"' = A"' B"'. The virtual image or "inner field," seen through the telescope, always remains the same, but the size of the outer or actual field rapidly diminished as it approximates the lens. A small field at a short distance is made to occupy the same amount of space in the virtual (inner) field as a large one, and is therefore enlarged.

In figure 5, the visual angle is relatively small; in fact, smaller than that of ordinary cystoscopes. The larger the visual angle, the more rapid will be the increase in size of approaching objects. Or. conversely, a strong large angled lens will make objects

* Modified from Nitze.

* The focal length of objective lenses used in cystoscopes vary between 2.5 and 5 mm.

* The slight variations in the focus x R are not taken into consideration.

appear to dwindle or diminish in size more rapidly (that is within shorter distances), than a weaker, smaller angled lens (Figs. 2 and 3). It follows then that the various parts of objects lying in a plane perpendicular to the axis of the telescope will be seen in normal proportions, whereas considerable distortion or exaggerated perspective is characteristic of those objects lying in a plane parallel with the optical system. This is graphically illustrated in figures 6, 7, 8 and 9. The greater the vista, or the visual angle, the greater is the distortion within the same distance.

Having taken a brief survey of some of the essential optical principles underlying the Nitze telescopic system, we may now turn our attention to their application.

In the new Goldschmidt instrument we have a sheath with a large fenestra about one inch long whose width corresponds to the diameter of the sheath, necessitating the cutting out of one-half the circumference of the tube. Just behind the window, lies the objective of the telescope, and the source of illumination is either at the point L_1, in the beak, or at the roof L2 (Fig. 10). This diagram graphically illustrates how imperfect a view could be obtained by a lens of small angle. The heavier dotted lines show the increase in visual capacity of a large angled lens. Indeed an angle of about 90 degrees is needed to bring the urethra in the immediate vicinity into view. A large angled lens with its deficiencies is therefore an essential in this method of urethroscopy.

What are the pictures brought into view by this method? If the axis of the telescope lies in the center of the sheath and the fenestra measures the diameter of the tube in width, a view such as depicted in figure 12 would be obtained. When the source of light is at L_1 (Fig. 10), this would take up the center of the field (Fig. 13); if the lamp be a long one, on the roof, as in the newer Goldschmidt models, a field having the appearance of Fig. 14 would result. Were we to make the fenestra less wide, the area seen would be still further diminished (Fig. 15.) A wide fenestra, therefore, is another essential in this method of urethroscopy.

Reverting to figure 5 we will see that the size of objects decreases in proportion to their distance from the telescope. A disc which is marked off in one-eighth inch squares will appear as shown in figure 16 when it lies in a plane perpendicular to the axis of the telescope and is situated at the so-called focal point of the system, where objects appear of normal size (virtual image and object of same size). In the urethra the structures are arranged in a plane parallel with the instrument, and the picture of such a disc one inch in diameter and lying against the fenestra would appear as in figure 17, in exaggerated perspective, slightly more than four squares occupying one-half the circumference of the field where they are seen at close range.

It follows then that the above method, although a great improvement upon all others used up to the present time is deficient in that it necessitates:

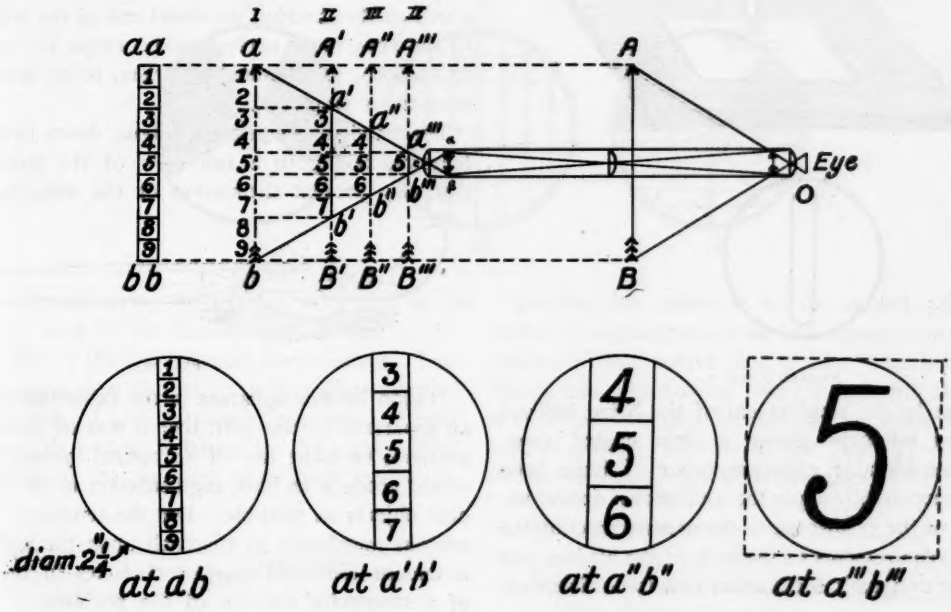
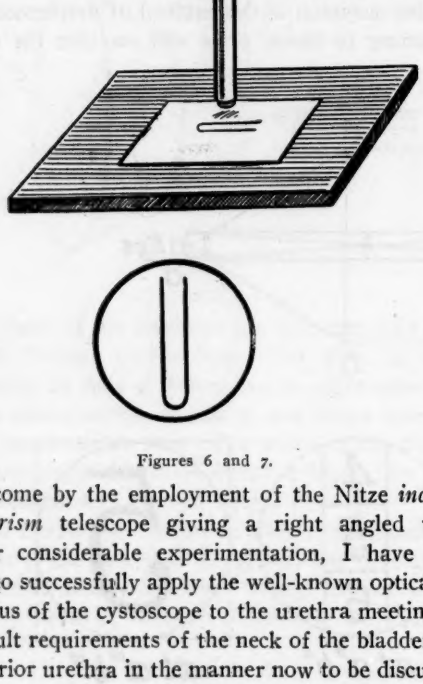


Fig. 5.

1. A large fenestra (the larger the fenestra the greater the traumatism);
2. A large angled lens;
3. A distorted image;
4. A partial field.

THE AUTHOR'S INSTRUMENT.

Most of the objections cited as impairing the efficiency of the direct telescopic method can be



Figures 6 and 7.

overcome by the employment of the Nitze *indirect* or *prism* telescope giving a right angled view. After considerable experimentation, I have been able to successfully apply the well-known optical apparatus of the cystoscope to the urethra meeting the difficult requirements of the neck of the bladder and posterior urethra in the manner now to be discussed.

Figures 8 and 9.

The obstacles that have to be surmounted in attempts to obtain an adequate picture of the parts under consideration by the new method are the following: (1) the increment in size of objects approaching the objective lens; (2) the difficulty in obtaining proper illumination; and (3) the rigidity and canalicular conformation of the posterior urethra with the tendency of the mucous membrane to prolapse.

If we put the flat of the hand very close to our eye, we will practically discern nothing of the field put in front of us, firstly because the optical apparatus of the eye is not accommodated to such near objects, and secondly because of the absence of proper illumination of the object to be seen.

Let us see how these difficulties are met in the construction of the new instrument. The instrument consists of a sheath, obturator, and telescope. The sheath is provided with a detachable beak, a small fenestra and two irrigating cocks. The source of illumination in the original model, type I, (Fig. 18) was a lamp that fitted into a globe which partly occluded the distal end of the window. In the new, more perfect model (type II), (Figs. 27 and 28), an illuminating prism, to be described later on, is employed.

The pupil of the telescope looks down upon the fenestra, taking in a full view of the structures that may present themselves at the window.

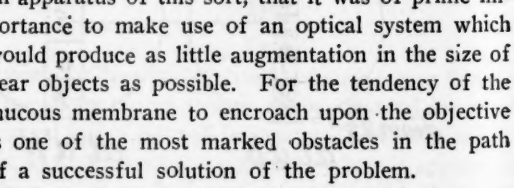


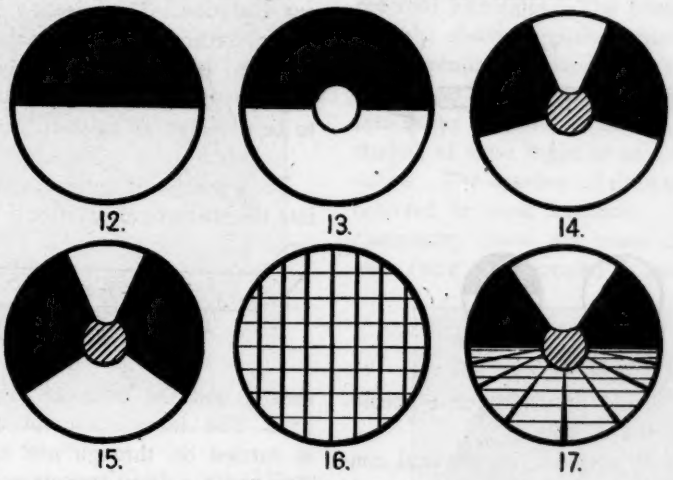
Fig. 10.

It soon became apparent in the experiments with an apparatus of this sort, that it was of prime importance to make use of an optical system which would produce as little augmentation in the size of near objects as possible. For the tendency of the mucous membrane to encroach upon the objective is one of the most marked obstacles in the path of a successful solution of the problem.

The optical requirements were fulfilled in the following way: firstly, by placing the telescope eccentrically in the sheath, thus removing its axis and entrance pupil as far as possible from the fenestra; and secondly, by the employment of a new prism. The Wappler lens-prism which, by virtue of double reflection, gives an upright image (Figs. 19 and 21) was substituted for the Nitze prism or Otis-Wappler hemispherical lens (Fig. 20). It is cut out of a cylinder, two plane surfaces being ground so as to enclose an angle of about 43 degrees. The roof surface is backed like a mirror, and the reflecting portion of floor may also be treated in this way, although this is not essential. Comparing the course of rays in this prism with the Nitze (Fig. 20) we see that in the former an upright image is produced. Furthermore, by virtue of its peculiar shape, the entrance

pupil of such a system is carried high up, away from the object, thus giving conditions much more favorable for reduction of the magnification. In addition, it was deemed expedient to reduce the size of the visual angle so as to still further obviate the enlargement of approaching objects.

Let us compare the utility of such an optical system for observing the urethra with that of the telescope used in the Brenner and Brown cystoscopes, and in the Goldschmidt urethroscope. Figure 22 shows how objects lying in a plane parallel with the axis of the instrument are seen. Figure 23 shows the picture obtained by the right angled method, figure 24 the view with large angled direct telescope method (Goldschmidt). From the diagram (Fig. 22) it is apparent that if the plane of AB or CD is parallel with the urethral wall, all objects on the same level will be seen in their proper proportions, whereas objects that are considerably elevated will appear enlarged. An arrow will be larger at AB than at CD. This is a shortcoming which is of little moment for the following reasons: first, except for the verumontanum the parts to be viewed are practically all situated on a level*; second, by means of fluid distension (Goldschmidt) the parts can be successively made to approach and recede giving us a series of pictures out of which the eye can easily construct a composite; and thirdly, by rotating, advancing and withdrawing the instrument a completely satisfactory view even of objects of considerable altitude can be obtained.



Figures 12 to 17.

Fig. 18.

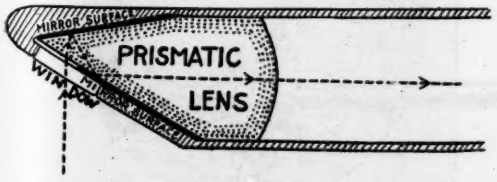
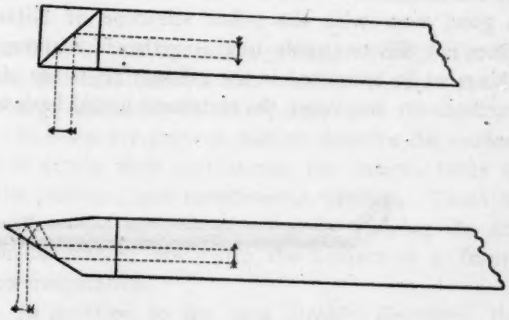


Fig. 19.

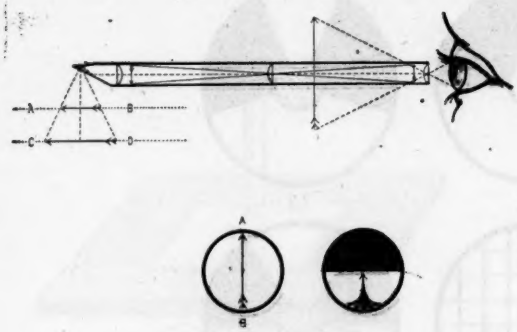
Turning our attention to the second problem, that of furnishing adequate and appropriate illumination, it was found that a lamp situated as in Figure 18, would come into contact with the mucous membrane and would cast its most intense rays at portions outside of the limits of the field of the telescope; that a certain amount of transillumination of the mucous membrane, especially when this approaches the lamp, would be unavoidable (Fig. 25); and that the color of the parts as well as the details would become obscured. In the perfected type II (Figs. 26-27-28) a large "illuminating" prism was therefore placed in front of the lamp which was set back a sufficient distance in the beak. The function of this prism is the con-



Figures 20 and 21.

* They are actually situated in as many planes as there are hypothetical lines constituting the urethral cylinder, each and every one of these lines can be made to lie parallel with the axis of the telescope, which can be rotated so as to bring any object in the center of the fenestra and so in the center of the field.

verse of the lens-prism in the telescope. It transfers the source of light to a point on the roof immediately adjacent to the "eye" of the telescope (Fig. 26). Thus an approach to the ideal in which the source of illumination and "eye" are at nearly the same point is attained. In this system the rays of light will tend to fall down upon the mucosa



Figures 22, 23, 24.

even if the latter should protrude for a considerable distance into the window.

Thirdly, we have to consider the physical conditions in the posterior urethra. In cystoscopy we have learned that a certain amount of distension

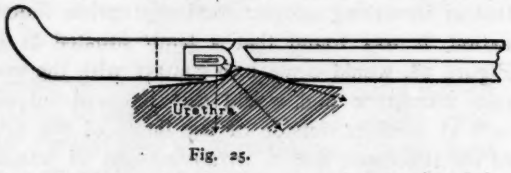


Fig. 25.

of the bladder with fluid is essential for obtaining a good view with the prism telescope of Nitze. Does not this too apply to the urethra? Although this must be answered in the affirmative, if the old methods are employed, the statement would have to be considerably qualified as regards the new instrument. The formation of a cavity by means of fluid distension has for its purpose the unfolding of the plicated walls, and it makes the physical conditions fitting for ample illumination and proper vision. It will be readily granted that a telescope of large focal distance would require a greater working space than one adapted to close objects. By the adoption of a fenestra of small size into which the mucous membrane would hardly prolapse except at the colliculus, by the employment of the new prism method of "roof" illumination, and by the introduction of an optical system of small visual angle whose pupil lies as far as possible from the field, we have succeeded in establishing conditions which permit of good vision in a large part of the posterior urethra even without dilatation. The injection of fluid into the posterior urethra while manipulations are going on, however, is of value in studying those structures whose apparent magnified altitude would cause us to be deceived as to their true size.

TECHNIC.

The sheath with the obturator in situ is introduced into the bladder. The latter is irrigated through the

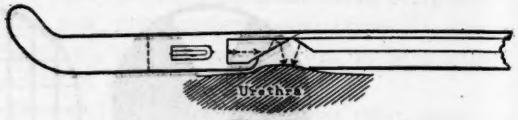


Fig. 26.

sheath, and the telescope is then inserted (Fig. 27). The introduction of fluid from now on is carried on through one of the lateral cocks, either with a Janet syringe or an irrigator. If the trigone and the neck of the bladder are to be inspected, it is well to begin by introducing about three ounces of boric acid into the bladder. The manipulation of the instrument is now begun. The ureters and trigone are inspected. As the sheath is withdrawn the sphincter of the bladder will come into view as a perfectly illuminated margin (Fig. 29). The instrument is rotated about its long axis until every part of the internal sphincter has been scrutinized. The inspection of the floor of the posterior urethra is now in order. A little fluid injected from time to time suffices to unfold the plicated walls. Images are of maximum size when the fluid is not flowing. For a complete examination not more than 50 to 150 ccm. are necessary.

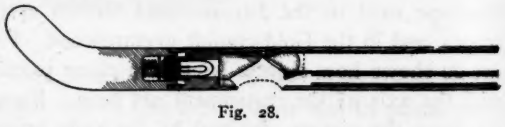


Fig. 28.

Fig. 27.

Inasmuch as the floor of the posterior urethra is of most importance, we begin our observation by

withdrawing the instrument, keeping the fenestra in the mid-line. Our first picture, after the margin of the internal sphincter will have been passed, will be the region above the upper end (bladder end) of the *colliculus* or *verumontanum*. We next see the fossa behind the upper limits of the *colli-*

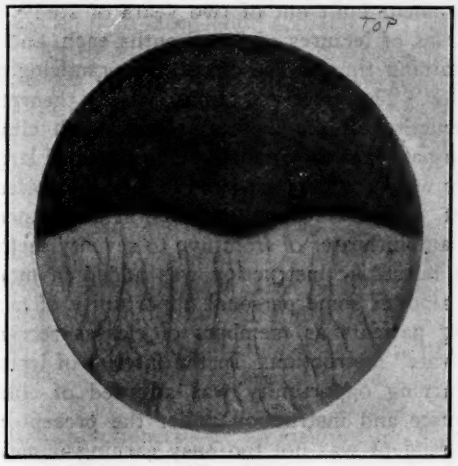


Fig. 29.

culus, and the *colliculus* itself (Fig. 30). From here down it is well to rotate the shaft so as to bring into view not only the whole of the colliculus and crista, but also the depressed areas on either side in which lie some of the prostatic ducts (Fig. 31). After the floor of the posterior urethra has been studied, the roof and lateral walls can be eas-

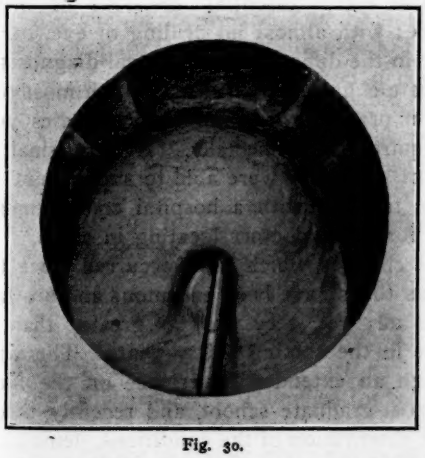


Fig. 30.

ily brought into view by rotation of the shaft. Owing to the small size of the window it is possible at any time to rotate the instrument completely around its long axis, without causing injury.

PICTURES OBTAINED WITH THE INSTRUMENT.

Practically everything in the prostatic and membranous urethra can be seen with great distinctness; the sphincter region, the trigone and the ureteral orifices too can be thoroughly scrutinized. Owing to the small size of the window, the small field and the type of illumination it is best to view the ureters at close range. A "bird's-eye" view must not be sought.

In the sphincter region, distinct differences can be noted between the floor or inferior wall, and the roof and sides. The transition of the trigone into the shelving portion above the colliculus presents peculiarities which will be discussed in a future paper. The verumontanum can be brought into either a central or lateral position of the field, studied at close range or at a distance, as we may desire. The opening of the utriculus can be easily detected in most instances. The orifices of the ejaculatory ducts are more difficult to find, but even these were located in most of the cases ex-

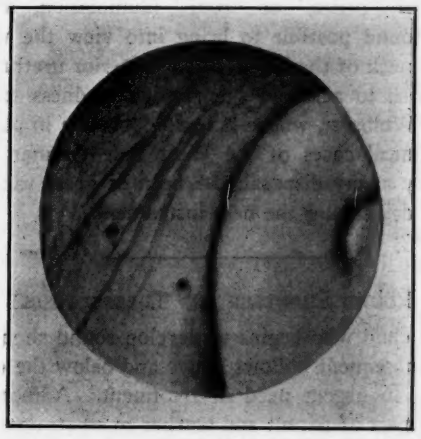


Fig. 31.

amined by me up to the present writing. As for the prostatic ducts, a fair number of these can be recognized in almost every case.

It is not my purpose here to describe the numerous details that characterize the various parts of the prostatic and membranous urethra. These as well as the pictures obtained by viewing the anterior urethra will form the subject of a future communication.

In addition to the uses already described, the instrument may be of service in the following ways:

1. The replacement of the curved beak by a blunt tip will allow of its use for the anterior urethra.

2. Supplied with a short beak, or even as it is, the instrument could be used for inspecting the trigone and ureters of bladders that hold but very small amounts of fluid, 30-60 cubic centimeters.

3. Topical applications can be made after removing the telescope and drying out the sheath.

4. Ureteral catheterization can be easily done; and a delicate filiform bongle can be passed into the utriculus or ejaculatory ducts under the direct control of the eye.

5. Treatment can be also carried out under direct control of the eye; a fine forceps or a galvanocautery electrode can be passed through the channel below the telescope. Figure 31 shows a filiform bougie in the utriculus.

CONCLUSION: The great advance made in the study of the posterior urethra by the introduction of the Goldschmidt instrument has attracted attention to the possibility of an extension of our meager knowledge in this still hidden field. By the employment of the indirect Nitze telescope in which a new type of prism is substituted, and by the use of a sheath carrying a small fenestra and a new variety of "prism" or "roof" illumination, it has been found possible to bring into view the whole of the neck of the bladder and posterior urethra.

I wish to acknowledge my indebtedness to Dr. A. L. Wolbarst, whose kind co-operation in placing the clinical cases of the West Side German Dispensary at my disposal, has been of great value to me in developing the new instrument.

ROUND SHOULDER AND TUBERCULOSIS.

The child who begins to develop round shoulders with subsequent hollows above and below the clavicula is in urgent need of treatment. Admonition on the part of parent and teacher to sit straight and to walk erect is futile, as the child lacks the muscular strength to maintain the proper relationship of ribs and vertebrae. In addition, the upper ribs, with the cartilage and bones, are retarded in their growth; the muscles do not develop. This part of the thorax hardly follows the respiratory excursions. Hence the upper lobes of both lungs are not properly ventilated. The arterial blood supply and the lymphatic circulation are also reduced to a minimum. The vital capacity of the lungs, which expresses in numbers the difference between maximal inspiration and maximal expiration, is lowered to a considerable degree. The upper air passages are sometimes obstructed by large tonsils, adenoid growths and chronic nasal catarrhs. From all this it is easy to see how, in the upper lobes of the lungs, poorly supplied with oxygen and clogged with an accumulation of mucus, the tubercle bacillus will find a medium which invites its settlement and multiplication.—ALEX. C. WIENER in the *Chicago Medical Recorder*.

COMING RURAL SURGERY.

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BRANCHVILLE, SUSSEX COUNTY, N. J.

Thirty years ago the great majority of American doctors entered into practice with a medical equipment built out of two years of study, two courses of lectures of five months each, and the remaining time in the office of a practicing preceptor. They received almost wholly theoretical instruction in the medical school, such clinical information as they gained being obtained largely from what could be gathered in seeing a professor treat, or operate upon, patients, at a distance in the amphitheater of from five to seventy feet. To this telescopic instruction was added in moderate amount some personal opportunity of examining patients as members of classes receiving "private" instruction. In the interim of lectures a varying opportunity was afforded of clinical practice and instruction under the preceptor, if the student was not too busy earning money to pay for the next lecture course. Laboratory instruction was excellent in histology and pathology, though utilized by only a minority of students. There was scarcely any instruction in bacteriology, or synthetic chemistry; and organo-, photo-, sero-, hydro-, and other therapies were scarcely initiated.

With this largely theoretical training in the seven or eight "essential" divisions of medical science; with almost no drilling of eye, ear and finger in the difficulties of physical diagnosis, the graduate began to treat disease with most of the skill in practical handling of sick bodies yet to be acquired experimentally. A very small per cent. of graduates were able to supplement their school training with a hospital course, most of these fortunate doctors locating in cities.

The changes which have occurred since these parlous times have been enormous and are familiar to all; yet, they are no greater than will evolve in the coming thirty years. The writer, through an extended experience on the faculty of a post-graduate school, and recently through direct observation of the conditions, demand, and needs of the country practioner, believing that he has had unusual opportunity to see things as they are in both city and country. When in 1881 the doors of the New York Polyclinic were opened by its present distinguished president, Professor Wyeth, the first patient to apply was a ten-year-old boy, suffering from a Colles fracture. His

ambition had futilely led him to climb the pillar of the elevated road, only to fall. He was the first clinic, proud of it, and through many years occasionally visited the institution which he started, to watch it grow. The physicians who came to "brush up" in clinical work, were largely experienced in private practice, and deeply conscious of their need—not actually of "brushing up," but of getting a part of individual instruction *which they had never had.* They represented the live, progressive, and scientifically ambitious men of the profession. Each of these men became a higher standard of practitioner in his community, and, through natural competition, forced others to also "brush up." The New York Polyclinic and the Post-graduate, whose doors were thrown open a fortnight later, were the initiators of individual clinical instruction, and were so truly an undergraduate supplementary need, that many similar schools have been founded throughout the United States. A very considerable per cent. of practioners—by no means limited to this country,—have taken personal training at the schools, many returning again and again, to actually "brush up." The influence of these schools has made itself felt on the undergraduate schools, which have given more and more consideration to clinical instruction.

One of the first noticeable effects of operative individual teaching, as given in post-graduate schools, was an increase in the amount of surgery done at home, in towns and country, instead of sending the patients to city surgeons. This has not been an unmixed blessing, though bound to be an early stage of higher general efficiency. Many surgical needs do not permit the removal of patients; it is far better that such cases receive the best possible skill on the spot.

The oversupply of men studying medicine in this country has been so rank, that, if enough practitioners were continued in practice for each to work up to his highest efficiency, over one-half would be retired. This has made the percentage of better medical men spread further into the wilds, and added another influence for leavening the lump into higher efficiency. There can now be found a doctor in almost every radius of reachable distance, armed with modern equipment in medicine and surgery. So we are seeing the old situation, in which the surgical surroundings in remote districts were no worse than the inferior equipment of the doctor, shifting to that of the same poor surroundings, with a well-trained doctor. So the next epochal development has got to be: The improvements in rural means of treatment. The time can never come when human beings ill with acute appendicitis, or strangulated hernia, or intestinal gunshot wounds, or accident injuries, etc., can be shipped to urban headquarters to better advantage than they can be cared for by reasonable skill and house conditions at home. And this list of non-transportable cases is much lengthened by addition of many patients with whom time is not a component, who cannot afford to leave home and pay for city surgery at city rates. Nor is it wholesome to implant the seeds of medical charity in their hearts by having them get such city service as imported charity patients.

The contrast in attitude of mind of country and city patients toward medical free service is striking and extreme. There are "dead-beats" everywhere, but the farmer and town laborer expect to pay for medical service as much as for commodities. The people in large cities are debauched by medical charity, and the profession is throttling itself. About every other sick resident in New York is treated free, not to mention the host of suburban beggars who are willing to lie as to their residences to get free and specialist treatment. At the low rate of one dollar a visit, the doctors of New York are contributing $7,500,000 of services annually free; a sum equal per capita to their average incomes—as shown by the writer in *The World's Work,* in 1907. Most of the abuse of medical charity is due to the relation which large clinics bear to doctorial and institutional prestige; abundant material—good clinical teaching, and stronger appeal for endowment because of the "heavy demand of the poor for medical aid"—a jumble of cause and effect that would be amusing if not so sophistical.

Any evolution in rural conditions of practice which allows this medical charity abuse to creep in will prove deplorable to both patient and doctor, and should be watched as the farmer watches the thistle and poison ivy. With the steady improvement of highways and use of automobiles radius of territory for surgical home attendance is widening; and, as stated above, the standard of surgical efficiency is steadily rising.

But the home on the highway stands still, or even, in older regions, is deteriorating. In some of these country homes the surgeon finds well adapted operating rooms architecturally considered—plenty of room and light; and in others not

even these fundamentals. But a nurse who is sufficiently trained to properly prepare for a capital operation in one of these homes is an uncertain item. There are first-class nurses here and there in the country, but not enough to be sure of one for a quick surgical need—a few hours. If the patient cannot be shipped to a distant hospital by railroad, the surgeon is at times compelled to perform capital operations, assisted perhaps by one or two general practitioners and well-meaning members of the household, who will persist in putting their hands in all the water they fetch —lest it be too hot or cold— and spreading out every towel on the furniture, long greased by the living and departed occupants. Now, in the light of modern surgical demands in capital operations, and the over-abundance of city hospital accommodations; with sufficient numbers of high-class surgeons reaching into nearly every community; with the rural people very generally informed as to what constitute first-class surgical conditions—as they are; with our busy medical aid societies almost wholly devoted to urban humanity; with too much in the cities, and too little in the country, is the equalizing force innate to supply and demand going to adjust the inequality?

One thing is necessary to secure satisfactory conditions, and that is a hospital in every reachable radius. It need not be large, nor cost more than three to five thousand dollars; but it must be outfitted to provide ready facilities for capital operations.

That present crude and intolerable conditions, which can, in a broad economical point of view, be corrected by hospital developments; which will pay their cost and prove even profitable to a rural community in increased labor efficiency, will continue, seems impossible to believe.

The production of these rural hospitals will come through three sources of aid: by private surgical enterprise; by borough or township endowment, and by endowment through wealthy individuals.

Under the first method, surgical use of the hospital will be restricted to the owner; which limits its service largely to those who are this surgeon's patients. Under the other two parenthoods the hospital is, or should be, at the service of all practitioners—the truly American principle prevailing; and while this method leads to surgical undertakings by men more controlled by jealousy and sleepy conscience than by skill, yet such is the practice outside the hospital, and real merit will work for the wise distribution of patients. The one thing that the "open-door" hospital must secure is clean trails from one operator to another.

It is suggested to our great "Foundation Fund" commissioners, that a thorough study of the wisdom of district rural hospitals be made; of whether, for instance, an equal application and method to that of the Carnegie libraries, would be wise, and of even greater communal aid, in view of the vast and cheap supply of literature that now reaches every district. Thirty years ago there were scarcely $1,000,000 in endowment for medical work, aside from city hospitals. Today we must figure around the hundred million. Rural hospitals need not be, and should not be restricted to surgical cases. One of the growing and important features of practice, which the hospital could greatly aid, will be in enabling doctors to get fresh sera promptly—two requisites that are variedly unattainable with every doctor looking out for his single needs.

In the past century the figures of rural to urban population have shifted from 4 per cent. to 40 per cent. in cities. Every influence of the times: under-production and over-demand; good roads and automobiles; strain and Nature barrenness of big city life; the example of the beautiful country estates of the wealthy on walled-in urbanites, coupled with improving facilities of country life, is working to stem the city inflowing tide, and it will not be many years ere we begin to realize the truer values of town and country as they do in England, and, in lesser degree, in France.

POST-OPERATIVE DETAILS.

I believe that it may be said that skill in the use of post-operative details has much more to do with the saving of patients' lives than the recognition and consideration of renal and cardiac diseases. All text-books lay great stress upon the preliminary recognition of these lesions, while as a matter of fact their presence has less to do with operative mortality than ignorance of the proper management of the post-operative vomiting, distension, bronchitis and other symptoms. In other words, it is surprising with what safety operations can be performed upon patients with advanced cardiac and renal disease, and it is equally surprising how easily an otherwise healthy patient may be lost by the unskillful treatment of vomiting, ileus, etc.—JOHN C. MUNRO in *The St. Paul Medical Journal.*

SCOTLAND'S CONTRIBUTIONS TO MEDICAL AND SURGICAL DEVELOPMENT.*

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How many of us ever stop to think of the innumerable gifts, which we, as heirs of the past, have received from our ancestors? How often has it occurred to our minds that our rich heritage carries with it an implied duty to posterity? By what principle of ethics can we absolve ourselves if we fail to perform this duty, by failing to transmit to the future, not the principle alone but the accumulated interest, as our pay for the benefits to ourselves that the heritage brought. To receive gifts without a thought of reciprocation is to stamp our souls with the stigma of the beggar. A noble soul scornes to act the part of a pauper and, therefore, refuses to accept the parental heritage without pledging itself to return the same with added interest to future humanity. As debtors to our forebears we should all be anxious to do something to add to the happiness of posterity. If we fail in this what better are we than parasites upon the tree of evolution? Natural ethics demand, not only of individuals but also of races and nations, that each shall scorn to accept gifts from others without at least an equivalent return. This is Eternal Justice and anything short of this is robbery. Other nations have contributed to our wealth of knowledge. What have we returned to them in payment of their generosity? As Scotchmen, and as Scotch physicians, are we all quite sure that Scotland has done its share in the great work of advancing medical knowledge? Has Scotland a record of which we can be proud when brought face to face with what other nations have done in the way of fighting back disease, assuaging the agonies of the suffering, and lessening the sum total of human misery? Can it, by way of friendly rivalry, challenge other nations to show a greater usufruct for the talents left us by our Lord in heredity? Or has it buried its talent in the earth hoping to please the master by a mere beggarly return to the principal? Friendly rivalry among civilized nations, that makes each anxious to outdo the other in garnered stores of beneficent deeds, stimulates toward higher efforts and is, therefore, wholly wholesome and commendable. To say that no country on our planet has given its sons and daughters greater reason for being proud of its deeds is but to say that the verdict of the master, as he returns from the far country, must be in Scotland's favor. It reads: "Well done, thou good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things: enter thou into the joy of thy Lord." The man, or the woman, the nation or the race, that keeps on increasing the sum total of the inheritance to humanity, like Abou Ben Adhem, is sure to find his, her, or their names leading all the rest.

The geographical area of Scotland is small. Its people are, relatively considered, but a handful. Seen from our nearest celestial companion it could be covered by a needle's point. In spite of this it has, during the period of the earth's phenomenal scientific growth, strewn the whole globe with humanitarian gifts. There is not a corner of our globe so remote but people can be found whose lips are ready to bless the medical fruits of Scotland. It, more than any other nation, has been the Good Samaritan of this planet. From it, as a fountain, has come flowing forth that knowledge that is to be prized above all riches. Its work is so indelibly stamped upon the pages of history that it can never be effaced. In common with the rest of Europe it slumbered through the dark ages. Those were days in which men thought themselves already in possession of all worthy knowledge. They tacitly held that every new discovery was a device of the evil one to ensnare souls. Anatomy—and particularly human anatomy—was considered accursed. The very foundation on which the eternal truth of medical science had to be built was forbidden ground. The medicine of that sad time "was the outcome of a remote mythical epoch. It was content with the effect of certain venerable traditional medicaments on the living body, but knew little or nothing of the inner structure of the body on which it tried its drugs. The dissection and examination of even a corpse was regarded as a deadly sin, and was visited with secular punishment. Scientific medicine did not exist until this prohibition was removed." (*Haeckel: His Life and Work, p.* 55.) For many centuries the mere handling of a corpse, for burial purposes, made the handler spiritually unclean and relegated him to the lowest and most despised social cast or demanded of him compliance with costly ceremonials of purification. For centuries the knowledge of bodily structure that a physician was permitted to acquire had to be secured by the dissecting of birds and beasts. Even this had

* Read before the Brooklyn Caledonian Medical Society, Nov. 26, 1909.

to be interpreted in accordance with Galen's ancient knowledge or with the commentaries of Galen's work written by others. The whole world had, in the name of religion, buried its one talent, in utter forgetfulness of the parable of the kingdom of heaven. We call that time and that condition of things which this burial brought about—the "Dark Ages." "Cast ye the unprofitable servant into outer darkness; there shall be weeping and gnashing of teeth," are the closing words of the parable. How prophetic they are. Who can read the account of the Black Plague, with its terrible results, and not see how literally all this came to pass? Truly, indeed, there was weeping and wailing and gnashing of teeth as an inevitable result of this burying of human intelligence in the intolerance of bigotry. This was the scourge that compelled Petrarch and Boccaccio to light the torch of the renaissance. When Petrarch's Madonna Laura, and the relatives of both Petrarch and Boccaccio, died like rotten sheep to be buried in a common dump heap with hundreds more, what wonder that it aroused their souls and made them demand better things? What cities were deserted and the ailing abandoned by their friends; when wails and shrieks of the dying resounded and echoed amid unanswering stone walls; when death counted his harvest by millions within a single year; when fathers, mothers, sisters, brothers, sweethearts, and friends forgot love and forgot duty in their eager selfishness to save their own lives, was this not truly the pitiable outcome of that outer darkness where is weeping, wailing, and gnashing of teeth? Soon, however, the torch lit by Petrarch and Boccaccio lit up all of Europe and lit up the source of Galen's knowledge compelling priests, physicians, and laymen to awake from the slumber of many generations. Men immediately began to think as they had never thought before. Medical men awoke the slumbering instincts of curiosity and began that appeal to nature by experiment that had been neglected between all the dark years that lay between themselves and Galen. As Galen gained his knowledge so they sought to gain theirs. This the study of the classics in the original brought about. Bologna, Padua, and Pisa were thrilled by the new inspiration. It proved to be far more potent than the musty information derived from decrepit Salerno. It was not long before Italy had her Cesalpino, France her Ambrose Paré, Belgium her Vesalius, Spain her Servetus, and England her Harvey. These men were the first fruits of the new dawn. Of them any country might be proud. They were the very salt of the earth. But, alas, the one-talent men were intolerant of them. Bats and owls do not like light and the lovers of bigotry and darkness despised such heroes. One of them was burnt at the stake for opinion's sake. The rest suffered from less or more bitter persecution. Time rights such wrongs and to-day they are victors. With the general awakening that followed the renaissance Scotland stepped boldly forward to do its duty. Before Vesalius, Paré, or Harvey were born, Edinburgh had established its Royal College of Surgeons, the most ancient medical corporation in the British Isles. Its first seal bears date of July 1, 1505. In 1583 "The Town's College" was founded, thus beginning the University of Edinburgh. (*British Medical Journal*, June 19, 1897, p. 1618.) The Edinburgh Royal College of Physicians was not started until 1681. Thus, bravely did the work of the new era begin.

"Man proposes but God disposes." With the most ancient medical corporation in Britain what happened to Scotland's Harveys, its Vesalius, and its Ambrose Parés? Where is the bright galaxy of its triumphant discoverers in medical science during this period? A glance at the history of our poor country during those troublous times will tell the tale. The very year that the Edinburgh Royal College of Surgeons came into existence John Knox was born. While that institution was struggling for its existence, in the midst of adversity, that same John Knox was working as a galley slave for his masters who had carried him off from his native land as a prisoner of war. When he escaped from his cruel task-masters and found his way back to Scotland the religious holocaust of the Reformation was in full blaze, burning more fiercely in Scotland than in any other part of the earth. Wishart was burned at the stake, in St. Andrews; Edinburgh was overrun with English troops, its best quarters pillaged and left in ashes and its people seeking safety in foreign lands, where they had not taken up arms in the crossed politico-religious strife. There was little chance for scientific work in the midst of such scenes of turbulence. The desperate struggle continued until, in 1603, political peace was brought about by Scotland and England being mutually united into a single nation. But this peace was of short duration. The signing of the Covenant, at Greyfriar's Church, in 1638, followed soon after by the martyrdom of the Rev. Hugh McKail, brought on the war of the Covenanters. Swift on the heels of this came a new period of carnage that to this day is

known in history as "The Killing Times"—the murderous times of Graham of Claverhouse and his cruel persecution of the Cameronians. It was during these times of terror that so many of Scotland's sons fled to Ulster and gave to the present day the Scotch-Irish. After the Cameronian trouble Scotland had comparative peace that was only broken into for a short time by the last desperate attempt of Rome, and the house of Stewart, to regain Scotland. On the field of "gory Culloden" their hope perished and liberty triumphed. Already had Scotland's renaissance of science begun through Alexander Munro, the elder. He became to Edinburgh what Vesalius had been to Padua. In a few years he leaped into international fame through his researches in anatomy and surgery and through his superlative power as an orator and teacher of these branches of medical science. Students flocked to Scotland from many parts of Europe and from that day to this Edinburgh University has never ceased to produce physicians of world-wide fame. Two of his sons won distinction almost as great as his own and in the same field of surgery and anatomy. A grandson, too, bearing the same name, of Alexander, marked a third generation of illustrious medical men. Immediately following the first Alexander Munro, Edinburgh and Glasgow were in turn blessed by the renowned Dr. William Cullen. As a poor Lanarkshire lad he fought his way to success by working and teaching in order to earn money to get his medical education. He received his degree of M. D. in 1740—just six years before the battle of Culloden. As a teacher he seemed to be alike at home in botany, chemistry and medical practice, all of which branches he successively taught in Glasgow and in Edinburgh. He inspired his students with a love of nature and a love of original research. As a result of this a long list of noted men can trace their fame and success to his example and advice. Being really self-made nature ground into him her most choice methods. He taught chemistry several years in Glasgow, before going to Edinburgh where he was Professor of Chemistry for ten years, only giving it up, a few years before his death, to take the chair of medical practice. He was among those who welcomed Robert Burns to Edinburgh and who liberally subscribed toward the defraying of the expenses of the Edinburgh—*i. e.*, the second edition of Burns' poems. As an evidence of the high esteem in which he was held by medical men in the United States his name has been immortalized in literature through Dr. Peter Bryant, giving it to his son, William Cullen Bryant—our renowned American poet. (*National Encyclopedia of Biography*, Vol. IV., p. 80.) Our Bryant Park, N. Y. City, is named in honor of the poet. No medical man before Cullen placed such great faith in the *vis medicatrix naturae* as he did. None so bitterly opposed venesection, in favor of which the entire profession seemed to have gone mad. He hurled his shafts of logic and of ridicule against the absurd practice with such effectiveness that no one now dares resort to it even in occasional cases where it might do some good. He stood alone as the apostle of our twentieth century doctrine that symptoms are nature's conservative efforts in working for the cure of the ailing. He taught that fever is a reparative process and conceded the right of thirsty sufferers from disease to draughts of needed water. The estimate that Burns has put into the mouth of Death regarding the "Jock Hornbooks" of those times, was Cullen's estimate of this same class of men. He rescued his young friend, partner in the struggle with poverty, and genius in the field of Surgery, from throwing away his future by becoming a preacher—a profession for which he was wholly unfitted. He thus gave to the world a genius where it would otherwise have had a commonplace country parson. William Hunter, the man thus rescued, became the leading anatomist of his age and none except his younger brother, John, ever contested with him, during his life, the honor of this great distinction. As a teacher Cullen was unexcelled in that he had the happy faculty of inspiring his pupils with the spirit of experimental research. So many of his students became distinguished that their careers attest the value of his methods. One of these became his successor in the Chair of Chemistry, in Edinburgh University, and he is declared by the British Encyclopedia, to have been "The most celebrated chemist of his time." Besides being a good lecturer and an able investigator, Cullen has the unique distinction of having been the first to defy public sentiment and deliver medical lectures in plain English instead of Latin, as had been the invariable habit prior to his day. Surgery had been taught in English because of its being then only a side line of barber practice, but it was deemed a degradation—almost a profanation of medicine to teach its practice in the vernacular. His friend, and intended partner, William Hunter, spent the winter of 1740 and '41 at Edinburgh University and from there removed to London. There he became the tutor of a son of Dr. James Douglas, an

obstetrician who secured for him the position of dissector and surgeon's pupil at St. George's Hospital. In 1746 he was invited to lecture before a society of naval practitioners, on surgery, and gave such satisfaction that he had anatomy added to the course and won fame as an orator and as an exceedingly lucid teacher of these dry and difficult subjects. In 1748 he was appointed surgeon-accoucheur at the Middlesex Hospital and in 1764 was made physician-extraordinary to her Majesty Queen Charlotte. He continued as a lecturer to within a few days of his death, holding that "man may do infinitely more good to the public by teaching his art than by practising it." At various times he had as assistants his brother John, and the histologists Hewson and Cruikshank. To his investigations, and those of his assistants, we owe most of our knowledge of the structure and function of the lymphatics, of the microscopic anatomy of the tissues, of the structure of cartilages, joints, and synovial membranes, and of the anatomy of the gravid uterus. He was a Fellow of the Royal Society, a Fellow of the Society of Antiquaries, Professor of Anatomy to the Royal Academy of Arts, Associate of the Royal Medical Society, and Associate of the Royal Academy of Sciences of Paris. Of his younger brother, John Hunter, the British Encyclopedia tells us that "as physiologist and surgeon combined" he is unrivalled in the annals of medicine." Could praise be more pronounced? To him we owe much of our knowledge of the physiology of digestion, our knowledge of the way bones grow, our knowledge of embryology, our knowledge of toxicology, our knowledge of the structure of the blood, our knowledge of color blindness, our first complete knowledge of the natural history of human teeth, our knowledge of how to treat aneurisms successfully, and our knowledge of the science of morphology. In 1787 he received the Royal Society's Copley medal for the importance to humanity of his great discoveries. He made original researches on the coagulation of blood, on digestion in hibernating animals, on the heat production of vegetables and animals, on the effect on fertility of ovarian extirpation, and on the cause of the post-mortem digestion of the stomach. He anticipated by a century our modern grafting experiments. In 1783 he started the Hunter Museum the collections in which won the admiration of foreign men of science as well as those of Britain. In trying to fathom the physiology of the production of deer's antlers he discovered how nature produces collateral circulation in ligated arteries. This led to the present method of treating aneurisms—a method that has saved hundreds of human lives and human limbs. This operation "excited the greatest wonder, and awakened the attention of all the surgeons in Europe." (*British Encyclopedia.*) His experiments on the horse and the microscopic exhibit on the web of the frog's foot settled forever the last doubt concerning Harvey's discovery of the circulation of the blood. The frog exhibit was a discovery of Dr. John Thompson, of Edinburgh, the friend of Prof. Dugald Stewart of Burns' fame. To him we owe catgut ligatures and the improved method of tying arteries so as to lessen the pain that was caused by the old method of binding them over corks. Both Thompson and Hunter made their life-saving discoveries by vivisection methods. Without the sacrifice of animals we would have continued the horrid cruelty of those days up to the present and sacrificed far more human lives than all the animals that suffered. Sir James Paget declares that "Before Hunter's time, it is certain that 95 out of a hundred persons who had aneurism of the principal artery of the lower limb died of it. At the present time it is certain that of a hundred persons with the same disease less than ten die." (*Nineteenth Century,* December 1881, p. 927.) And this is only one of Hunter's many discoveries. What wonder that one of his pupils, when writing on pathology, in 1818, declared that "When we make a discovery in pathology we only learn what we have overlooked in his writings or forgotten in his lectures." (*Ibid.*) As evidence of his keen desire for all kinds of knowledge useful to suffering human beings, it is related of him that on one occasion where a parent refused the privilege of a post-mortem on a child that had died of an obscure malady that he turned to the father and said: "Then, sir, I heartily hope that yourself and all your family, nay, all your friends, may die of the same disease, and that no one may be able to afford any assistance." That he did not have as hard a heart as one might infer from this remark can be seen from the words he wrote to his brother William in a letter of introduction which he gave to a poor man who needed medical care: "He has no money and you have plenty, so that you are well met." Among the illustrious pupils of John Hunter were such men as Jenner, of vaccination fame; Sir Astley Cooper, Abernethy and Cline. As an illustration of the kind of education he gave to Jenner, we are told that on one occasion the latter came to him with a problem in physiology

and said, "I think that" the answer must be so and so. Hunter quickly turned to him and said, "Don't think; investigate." What wonder that Jenner in later years followed this advice and experimentally investigated vaccination. Though Jenner was English, and his researches conducted in England, was it not the hard-headed Scotch advice of his teacher that gave to the world the boon of his discovery? But this reminds me that we must not forget another of Scotland's sons who insisted on his pupils "investigating." Joseph Black, pupil of Cullen and successor of Cullen in the chair of chemistry in Edinburgh University, began his career of success by experimenting. Though born at Bordeaux, both of his parents were Scotch, and his education was obtained in Glasgow and in Edinburgh. He received his doctor's degree from Edinburgh in 1754. It is doubtful whether there ever was written in this world another medical thesis of such great value to the human family as his proved to be. Lord Brougham has declared that it was "incontestably the most beautiful example of strict inductive investigation since the optics of Sir Isaac Newton." (*Britannica Encyclopedia*) Prof. Wm. Ramsay declared that it described "the first successful chemical experiment dealing with quantities," which means that it was the real birth of modern chemistry. For the first time in the history of our planet a human being made accurate weighings and measurings of chemical substances in a chemical experiment. Think, if you can, what this signifies. Without such weighings and measurings—without imitating Black's method—how could we ever have learned the law of definite proportions, of the existence of atoms, of the law of Avogadro, of the structure of molecules, in fact, of any part of chemistry as a science? Before Black we had a jumble of isolated chemical facts, but no chemical science. Every known law of chemistry is a law of quantities, and to Black's method must be traced all quantities in chemistry. (*Ramsay's Inorganic Chemistry*, p. 10.) English chemists gave credit for the birth of chemistry to Cavendish, and French chemists gave it to Lavoisier. The fact is that both of these great chemists owed the initiative for their work to Black. Lavoisier acknowledged this, in his letters to Black, and graciously had Black elected to membership in the Paris Academy of Sciences. Take from Cavendish's and Lavoisier's work all weighings and measurings—processes which they had to borrow from Black—and every bit of their work would become a rope of sand. But Black's thesis did more for humanity than has here been told. It gave us, besides what has already been related, the foundation facts on which our knowledge of the physiology of respiration has been built. Through him came our knowledge of the difference between foul air and pure air. It is true that an Englishman named Mayow, almost a century before, had performed a number of interesting and valuable experiments on the physiology of respiration. These, however, had made no impression upon his countrymen, and were buried in oblivion until Black's work showed the true meaning of respiration and some one called them back into living history as evidence that Black had been anticipated. The English Encyclopedia tells us that Black was "the most celebrated chemist of his time," but he was even more than this. Little stress is generally put on the value of theories. Why this is so it would be hard to discover. To theories we owe infinitely more than to facts divested of theories. Later in life Black studied heat, and was led by his studies to propound his theory of latent heat. This theory was taken up by a Greenock pupil of Black's named James Watt. By its aid Watt invented the modern condensing steam engine, so that without Black's theory we could have had no condensing steam engines, and without condensing steam engines we could never have had locomotives, railways, steamships, automobiles or flying machines. Since most of the world's hard work is now done by machinery, and since the great bulk of the twentieth century comforts are the products of machinery, it is not difficult to see what would happen to the people of the whole earth if Scotland's contributions to scientific progress could be suddenly eliminated.

There is still another great theory to which Scotland has contributed a large share, although England usually gets the credit for it all. Indeed, there are still many Scotchmen who are quite willing to let South Britain retain the honor, since they deem it of doubtful value. I refer to the biological doctrine of natural selection. In biology—for better or for worse—it has turned upside down the scientific conception of life. And yet what is it more than thoroughly logical extension of rigid Scotch theology? If nature's ways are God's ways, and if we be permitted to say that the laws of nature are the thoughts of God, then what nature wills or permits must be the will of God. Even John Knox would willingly have conceded that refusal to adapt ourselves to the will of the Supreme Ruler of the Universe would be sin, and that the wages of such sin—the sin of refusing the

mandates of God—deserved the penalty of such sin, which penalty the scriptures declare to be death. "Life," says Herbert Spencer, "is adjustment, and perfect life is perfect adjustment." How like is this to the words of Jeremiah: "Thus saith the Lord; Behold I set before you the way of life, and the way of death." To disobey the mandates of nature—the mandates of the Creator of nature—is death. To obey these mandates is life. This is the law of nature—the law of Natural Selection. Violation of any law of God, whether physical or moral, if that violation is persistent and extreme, is sure to bring death. Scotch theology says that such violation would deserve death. From this viewpoint every adaptation of nature represents before our eyes exactly what God's will must have been through all the countless eons of the past. While Dr. Black was at Edinburgh there came to that city from England a young medical student named Erasmus Darwin. After graduating there, he returned to England, where he practiced his profession, and, by way of diversion, tried to solve the problem of the relations of living things toward each other. Later in life he sent his son, Robert Waring Darwin, to get his medical education in the Scotch capital. He, too, returned to England to practice. The third generation of these Darwins having reached the student age, one of them was also sent to Edinburgh to study medicine, but it was not to his taste, and his father, in disgust, determined to make a preacher of him. He was then sent to Cambridge to study theology. "The best laid plans of mice and men gang aft agley," and so young Charles became as adverse to pulpit as to pill and betook himself to the line of study that had proven so pleasant a pastime for his grandfather. In Cambridge he was initiated into the mysteries of Paley's Natural Theology. In Edinburgh he was surrounded by evolutionists and the disciples of David Hume. How natural that he should combine these two antagonistic things and twist Natural Theology into Natural Selection. He had read Robert Chamber's "Vestiges of the Natural History of Creation," an Edinburgh book by an Edinburgh author. He had read Malthus' Theory of Population, an English book by an English author, but which wove into newer and clearer form a basic idea of Scotland's Adam Smith. The fountain head of all his inspiration is thus traceable to Scotland. Even Paley's ideas would probably never have been written had there been no David Hume in Scotland. While wandering in South America his active mind fused Malthus' idea with that of Paley's and there was born out of the union Natural Selection—merely a new view of Natural Theology. Independent of Darwin, Alfred Russel Wallace likewise fused Malthus with Paley and got Natural Selection. Though English, he traces his ancestors to Stirling and to the hero of Scotland. Whether for weal or for woe, Scotland had a large share in supplying the leaven that has leavened the earth with this fertile idea. To medicine it means much, as it has given us comparative anatomy, the recapitulation theory of embryology, a remodeled physiology, a revolutionized pathology, our modern serology, and, by its classifications of protozoa and bacteria, a wholly new view of the nature and persistence of disease. It has stimulated research in myriads of directions and has altered entirely our viewpoint of life.

One of the most original of the Bridgewater treatises came from another Scotchman, Sir Charles Bell. It was written to point out the evidences of design in the structure of the human hand. But this was a small part of Bell's claim for the gratitude of the world. If we ransack the pages of history, from the time he became a doctor to the days of Galen, we can find only dark, crass ignorance of the functions of the most important part of our structure—the nervous system. With him was born our first scientific knowledge of the physiology of our highest bodily organs. Of his discoveries in this the British Encyclopedia says: "These discoveries as a whole must be regarded as the greatest in physiology since the discovery of the circulation of the blood by the illustrious Harvey." On the continent of Europe it was believed that Bell's work was as much greater than Harvey's as the nervous system is greater than the circulatory. It remained, however, for Dr. Marchall Hall, English by birth and Soctch by education, to complete the work of both Harvey and Bell by discovering the capillary circulation and giving us a perfected description of the distribution of the nerves. Hall graduated from Edinburgh and was physician to the Edinburgh Royal Infirmary. To the public he is best known as the deviser of the method by which partly drowned people are brought back to life. To him we are likewise indebted for our knowledge of the reflex functions of the medulla oblongata and the medulla spinalis. And now we come to the consideration of another great name that is linked to England by birth, but to Scotland by education and by training. I refer

to Lord Lister. As assistant surgeon in Edinburgh Royal Infirmary, as professor of surgery in Glasgow University and as clinical professor of surgery in Edinburgh University, surely Scotland has the best right to lay claim to a large share of the honor of his wonderful revolution of surgery. The work was done in Scotland on Scotch subjects, in Scotch institutions, and aided by Scotch surgeons. His first paper on the antiseptic treatment of wounds was published in Edinburgh in 1867. He was then professor of surgery in Glasgow, and it was in Glasgow where he first experimented on the excluding of bacteria from wounded surfaces. Of his results Treves, years afterward, declared: "Lister created anew the ancient art of healing; he made a reality of the hope which had for all time sustained the surgeons' endeavors; he removed the impenetrable cloud which had stood for centuries betweeen great principles and successful practice, and he rendered possible a treatment which had hitherto been but the vision of a dreamer." (*Practitioner*, June, 1897, 623.) In order to feel the intensity of this tremendous truth, let us cull a page from the history of the capture of Rouen, in 1562, as given by Ambrose Paré. He tells us exactly how surgery was conducted at that time, and it was not a great deal better before Lister pulled it out of the pandemonium of long-lasting torture. He tells us that "there came such a stench from the wounds when they were dressed that the bystanders could scarce endure it; nor could this be set down to the want of dressing, or to the surgeon's fault, for the wounds of the princes and of the nobility stank as ill as those of the common soldiers. And the corruption was so great that if any chanced to be left without dressing for one day—which sometimes happened with such a multitude of wounded—next day the wound was full of worms. Many also had abscesses in parts opposite their wounds, which I remember befell the King of Navarre, the Duc de Nevers and divers others." (*British Medical Journal*, June 19, 1897, p. 1528.) As late as 1854 almost every case of amputation of the thigh died of septicemia within a few days. In this country professors of surgery were known to go from the dissecting of dead bodies to operations on living subjects without so much as washing their hands. They could see no need of taking such trouble. We are all familiar with the fight between Oliver Wendell Holmes and American obstetricians because of his trying to teach them personal cleanliness as a means of stopping the awful death rate from puerperal septicemia. They bitterly resented his interference in their freedom to be as filthy as they saw fit. Lister's method abolished all this and recreated surgery, gynecology and obstetrics. Shortly before this wonderful revolution a discovery was made in America that really formed one-half the battle in the surgical fight with germs. This was the discovery of anesthesia. Its practical application in surgery and gynecology must be credited to Scotland. Dr. Robert Liston, surgeon of the Edinburgh Royal Infirmary, first used ether in his operations and made the first step in surgical cleanliness that paved the way for Lister. He developed the technique of amputations and improved the methods of dressing wounds. Following him came Sir James Y. Simpson, the baker's son of Bathgate, Linlithgow. He "brilliantly fought and won the battle for anesthetics, and introduced chloroform." (*Britannica Encyclopedia.*) His tablet in Westminster Abbey credits him as being the man "to whose genius and benevolence the world owes the blessings derived from the use of chloroform for the relief of suffering." He was violently opposed by the clergy of Scotland because he dared to relieve, in this way, the mother's pains. From many a pulpit they hurled at him that curse on Eve, "In sorrow shalt thou bring forth children." Fortunately, he was their match and succeeded in turning their sophistry in such a way that brought public ridicule upon them. He called their attention to the fact that in the very first operation recorded in scripture, where God produced Eve from a rib of Adam, He performed it under anesthesia, by causing a deep sleep to fall upon Adam. (*Parks' History of Medicine*, 315.) Ether and chloroform are not the only links that bind Scotland with America in medical progress. In our haste we had almost overlooked that worthy Scotch-American, Ephraim McDowell, graduate of Edinburgh University and "Father of Ovariotomy." On his monument, in McDowell Park, Danville, Va., are engraved the words: "Honor to whom honor is due." (*National Encyclopedia of Biography*, Vol. 5, p. 148.) Hundreds of lives have been saved by this operation. Before the days of McDowell, Dr. John Bell, brother of Sir Charles Bell, and himself one of the greatest anatomists and surgeons of his time, frequently referred to the utter helplessness of trying to save those suffering with ovarian cysts. (*Albutt's System of Medicine*, Vol. II.) By pursuing McDowell's method, Dr. Thomas Keith, of Edinburgh, performed 284 ovariotomies with but few fatalities. Keith first used the drainage tube, thus adding another to Scotland's gifts to human-

ity. In connection with McDowell we must not forget to mention our own Scotch gynecologist, Alexander J. C. Skene, of Aberdeenshire and Brooklyn. His book on gynecology was probably the best then published on that subject. Still another great Aberdeen man of our day is Sir Patrick Manson, who, from a study of Laveran's plasmodium pointed the way for Major Ronald Ross to find it in the mosquito. From his study of this subject has logically evolved our present knowledge of how to suppress malaria and yellow fever. To him we are directly indebted for our being able, without an awful sacrifice of life, to excavate the Panama Canal. He, too, added very materially to our knowledge of filariasis. Of his work much more could be said, and of Scotland's great physicians many more might be cited. But I despair of the task of trying to complete the record. My manuscript pages are stretching into unseemly extent and your patience must be wearying of the dry detail. Of James Syme, Richard Bright, Richard Owen, J. H. Bennett, Oswald Bell, Andrew Fyfe, John Gordon, Matthew Baillie and many others who, as good Scotchmen and good physicians, have added to the sum total of human knowledge and human happiness, nothing can now be said for lack of space. To-day there are a multitude of Scotch workers in the harvest field of original medical research, who are doing honor to Scotland, but whom we must also pass unnoticed and unnamed. I trust, however, that the facts which have been presented are sufficient in themselves to show that, as Calenodians, we have ample reasons for being proud of the land of heather, proud of the example which it has set before the whole world, and proud of being members of a profession that has worked in darkness and in light, through pain and through sorrow, for the amelioration of the ailments of our common humanity as it struggles on toward that highest fitness which has long been the dream of poets and seers.

191 DEAN STREET.

DUODENAL ULCER.

With regard to diagnosis, there is no doubt that the principal and often the only symptom of duodenal ulcer is *pain*. The pain is usually severe and in many cases comes on two to four hours after food. This pain is often relieved by taking food. Closely allied to this pain, which is relieved by taking food, is the so-called hunger pain, which consists in an irresistible craving for food, together with pain, which is temporarily relieved by eating. —L. A. BIDWELL in the *Lancet*.

CHRONIC CATARRHAL INFLAMMATION OF THE MIDDLE EAR (*).

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Chronic catarrhal otitis media is not so attractive to contemplate, as a subject, nor so spectacular to treat, as a disease, as are many other affections in the province of otology. Nor have I any new, unique or original methods to propose, as to either the etiology, pathology or therapy of chronic catarrhal inflammation of the middle ear (generally written O. M. C. C., in our hospital records, especially in the old writings).

This disease has many names depending on the variety or degree of the affection. There are two distinct types, viz., hypertrophic or secretive catarrh of the middle ear, and adhesive inflammation of the middle ear, otherwise known as hyperplastic otitis media, adhesive catarrh of the middle ear, dry middle ear catarrh, chronic non-suppurative inflammation of the middle ear. This affection is, as its name implies, one with a distinctly chronic habit, in fact, chronicity is its main attribute.

Chronic catarrhal otitis media is a disease which is responsible for a very large proportion of the cases of deafness presenting themselves for diagnosis and treatment at our offices and as such alone its natural history, habits and tendencies and such influences as modify it, if there be any, should receive the most careful study and consideration. No other aural disease is responsible for so many strange, adventitious, subjective, inharmonious sounds within the human ear.

The histories of cases of O. M. C. C. probably begin much earlier in life than is supposed, doubtless antedating puberty by years in the formative stages of the disease though the full manifestations of this insidious and persistent affection are usually acknowledged by the adult class rather than earlier. My own observation extending over a series of years, during which period I have seen hundreds of cases of all grades of this trouble, is that more people with this dis-

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ease first consult the otologist between twenty-five and forty years of age than before or after, except those who have had previous trouble and were over forty years of age before concluding to be examined and treated.

The usual story told by the patient is that until a year or so before the hearing was good but that during the past twelve months there has been a gradually diminished hearing power for human voice sounds and that there had been noted certain strange, indefinable, or definite sounds emanating from within the ear itself. These have varied in character from a high-pitched strident noise to the purring of a brook, or the dashing of waves against a sandy beach; gurglings, whinings, creakings and hissing which the sufferer cannot rid himself of, constitute his ofttimes greatest cause of complaint and, as has happened, this class of symptoms has been the reputed cause of many suicides and of much morbidness of temperament. The harping of a strident tone monotonously within the compass of one's own ear (always aware that he alone hears) like a screaming siren whose shrill note warns the mariner to beware of his impending fate, is suggestive of a feeling of solitude. So these patients need peculiar care and encouragement, it may be, to overcome the monotony of their subjective life. The disease is usually bilateral but may be unilateral.

Fortunately recent collective experiences of otological clinicians, supplemented by the rhinologists, have shown that anticipatory therapeutic measures offer great hopes that a chief cause or causes, may be removed or diminished, for by the present day accurate methods, in competent hands, of diagnosing and treating conditions of the nose and throat, the chances are excellent for the elimination of that class of etiological factors dependent on morphological or structural abnormalities within the upper breathing apparatus. Therefore, it becomes our privilege to educate parents as to the importance of having occasional examinations of the ears, noses and throats of their children with a view to preventive measures, for in the form of ear disease which we are now considering no very urgent or emphatic symptoms usually point to the *causa causans*. It will be quite within the range of possibility if within a couple of generations the now very prevalent and serious catarrhal and allied diseases of the ears may be relatively rare. The prevalence of this disease as a sort of family heritage may thus be lost to sight.

Pathology. Chronic catarrhal otitis media may be the result of a formerly neglected catarrh of the eustachian tube or drum which having gone successively through various and varying stages and conditions of inflammation and hypertrophy leaves a hyperemic, hypertrophic, and subsequently hyperplastic tympanic condition which is destructive to function in that the natural mobility of the receptive membrane (membrana tympani) and the ossicular joints may be diminished or destroyed and even the stapedial attachment within the oval window so changed that the functionating of this end-organ of the conducting apparatus within the tympanum is inhibited. Subsequently atrophic changes may progressively attack the mucosa while a general tightening of the adventitious fibrous bands which have formed within the tympanum may cause a displacement of the membrana tympani, and within the drumhead itself pathological depositions of a calcareous character, added to the general condition approaching a fibrosis, may occur. Retraction and contraction of the membrana tympani occur, while within the cavum tympani there may be found adhesive bands which bind various portions of the tympanal walls to other parts, creating a contracted cavity full of adhesions, immobilizing and ever tightening. There is usually a condition of more or less complete rarefaction present within the eustachian tubes and tympani. This negative pressure favors the progress of fibrosis. Usually it is originally due to occlusion at the orifice of the eustachian tube.

In the form of disease of the middle ear known as otosclerosis, hyperostosis, or spongification of the labyrinthine capsule the above changes are not noted. I introduce the subject because until quite recently this form of disease has been classed by eminent otologists as one of O. M. C. C., but now the differential diagnosis is comparatively easy, while the prognosis is no better.

Politzer declares that in O. M. C. C. "The structural changes in the mucous membrane consist in partial or total transformation of the new formed round cells into fibrous connective tissue, interstitial hypertrophy of the mucous membrane with retrograde metamorphosis of the new formed tissue, shrinking, sclerosis, atrophy and calcification."

Ballenger says: "The contraction and calcification take place in the deeper portions of the

mucosa and fix the foot plate of the stapes in the oval window." All agree that fibrous bands do form in the middle ear. Ballenger says: "The mucous membrane of the entire attic in rare cases undergoes calcification and a partial or complete obliteration of the attic results."

Thus it is evident that (considering the testimony of the eminent authority just cited) there are many forms of non-suppurative inflammation of the middle ear among which are: the usual form of chronic catarrhal otitis media; chronic catarrhal otitis media with calcareous obliteration of the attic; and finally that form of obliterative ostitis of the labarynthine capsule especially of the foot plate of the stirrup.

As to the eustachian tubes, those conditions in the pharynx which were emissaries to the invasion of the tympani, through degenerative processes, have caused changes here resulting often in diminished patency owing to occlusions, thickenings, fibrous bands, etc., which persist.

Frequently there yet remains in the vault adenoids in toto or in remnants, or tubal adenoids have been unnoticed, while crypts, often containing thick mucous or muco-pus, surround the pharyngeal orifices of the eustachian tubes.

ETIOLOGY. That certain definite abnormal factors tend toward the production of this affection is certain, e. g., certain irregularities and diseases within the eustachian tubes which in turn may have been induced by irregularities within the nares, choanae, post-nasal space and fauces. A very common and generally overlooked, condition is found in the value of the pharynx where plaited around, over and through Rosenmuller's fossa may be seen or felt a sort of cobweb condition, which smothers the natural openings of the tubes and keeps them bathed constantly in a muciparous germ-laden, yeast-like mess, which essentially provokes and continues a softened, swollen, catarrhal condition of the mucosa.

Of course, adenoids if present, would prove detrimental to the integrity of the tubes.

Nasal obstruction preventing sufficient circulation, narrow chinks in the superior or middle nasal meati tend to permit of a state of negative pressure from the posterior side during inspiration and this hyperemia is induced at a vulnerable point in the pharyngeal wall. This tends to make tubal catarrh, which in turn favors O. M. C. C. Enlarged tonsils may induce a more or less constant hyperemia, which induces changes such as aural salpingitis, which in turn directly tends toward catarrh of the tympani. Very large extending tonsils may, during swallowing, by touching or pushing the velum palati, press it so as to aspirate the air from the eustachian tubes.

Certain family dyscrasias or inclinations cannot be denied as predisposing to O. M. C. C. We frequently find certain families with this tendency. While my own experience in studying these cases has been limited to the vicinage of New York, still I am informed per voce and by the reading of brochures on the subject, that it is in no wise to be considered a distinctly metropolitan affection or that it depends on proximity to the seashore for an etiologic factor. Dr. Sargent Snow of Syracuse and some of our colleagues in Colorado have each found the subject of such interest that they have made it plain that in those respective localities O. M. C. C. invades the human ear as frequently and certainly as persistently as is the case in our midst. Ballenger says: "Objective disease of the nose which leads to rarefraction of the air posterior to the obstruction during inspiration induces congestion of the nasal and epipharyngeal mucosa, and has a direct effect upon the congestion of the mucosa of the eustachian tubes and the middle ears. This after a time results in retrograde changes of an inflammatory type, as chronic catarrhal otitis media."

DIAGNOSIS. For practical purposes the diagnosis of chronic catarrhal otitis media may be easy,—given the history with its deafness, its tinnitus aurium, its duration, its progression, the absence of suppuration, perhaps the presence of that peculiar phenomenon, paracusis willissii, i. e., hearing better in a noisy than a quiet place, the peculiar quite subdued voice, the attentive mien, tendency to watch speaker's lips, together with those objective signs seen within the ear, e. g., changes of color and of brightness, as well as position of membrana tympani. The drumhead at first simply shows a diminished brilliancy of luster with possibly a slightly decreased convexity. Later actual retraction and contraction are found in most cases which with the thickening of the membrana tympani causes a disappearance of the light spot. The ossicles within the tympanum may appear very prominent as seen through the tightened retracted membrana tympani which now tightly hugs the malleus. It is well to remember that as this disease involves a portion of the conducting apparatus, rather than the appreciative apparatus (labyrinth) sound

waves will be readily appreciated if they succeed in reaching the nerve apparatus. Therefore, the tests of middle register tuning forks will be expected to show a greater bone conduction in ears so affected than would be the case in normal ears. Usually the B. C. is much longer and louder than the A. C. Such people are apt to hear well through any form of speaking tube. They often use the telephone quite satisfactorily. Middle register tuning forks, for example, those of 512 v to 1024 v, and all forks below, are likely to be heard better through bone conduction than by aerial conduction. This is especially true of otosclerosis. Where rarefying ostitis of the labyrinthine capsule, is present the same rule for conduction of sound waves holds good as in those other though less pronounced affections of the middle ear.

Until of quite recent date little has been known of that disease now understood by the terms otosclerosis and rarefying ostitis of the labyrinthine capsule, an affection whose prognosis baffles our present therapeutic methods, though surgery may yet be applied for the removal of the troublesome deposit of osseous tissue which, forming a hyperostosis of the walls of the foramen ovale, seals in the foot plate of the stirrup like so much lava sealing the hinges and producing ankylosis. While these cases respond to the tests sufficient for the diagnosis of O. M. C. C., most of which are more pronounced in advanced cases of otosclerosis, still an inspection of the membrana tympani may show little or nothing abnormal for it is of normal color and translucency while the position seems unaltered. Thus there may be very serious disease within the tympanum which cannot be recognized by inspection of the drumhead alone; a history must accompany other factors for a diagnosis.

Prognosis. Notwithstanding the inherent tendency of chronicity which is recognized in the affection, there are very many reasons why cases of this class should be carefully examined and reexamined in the hope that some factor of causation may be discovered and eliminated either with a view to improvement of the hearing and decrease of the head noises, or in the hope that the noises may be diminished or removed while the progress of deafness may be checked or retarded. It must be remembered that without treatment this affection tends toward a worse condition during the whole period of one's life. Anything which can stay the progress of the disease is to be encouraged and possessed. Given a case not too far advanced, i. e., where tissue changes have not become too pronounced, wherein defects of the nose and throat are present, with a progressing degree of deafness and tinnitus, by judicious, regular and sufficient treatment much may often be done to improve the hearing, reduce tinnitus aurium and stay the progress of the disease. In my private practice I am accustomed to tell all patients consulting me for the first time that owing to many favorable surprises as to the results of treating cases of chronic catarrhal otitis media when I least looked for good results, I strongly advise a systematic course of treatment, three times a week for a period of from six to eight weeks, that I may definitely determine the degree of improvement which can be promised; while at the same time my patient receives that treatment best adapted to his case. While benefitting most patients to some degree there have been those whose deafness has been considered hopeless by themselves and by me who have so improved under treatment that the wisdom of withholding an absolute prognosis without a reasonable trial has been impressed upon me.

As an illustration of the latter statement let me recall the case of Mr. C., an octogenarian whose great deafness had been such that for over forty years he was known as "very hard of hearing." He was a regular attendant at his Masonic lodge where he always (for years) sat near the master's station that he might the better see the lips and perchance (by aid of his curved hand to his best ear) hear the master's voice. So he had been known for years because of his regularity of attendance and his great deafness. He was induced to place himself in my care for the purpose of determining whether anything could be done for him or not. His case seemed absolutely hopeless. He claimed to have been treated before without benefit. Within three or four weeks he had no further need of special place or privilege at the lodge meetings and could hear not only the master of the lodge but the voice of any brother spoken in regular tones. He discontinued treatment within a year as he heard conversations easily without any mechanical assistance. In fact, he was able to hear well.

This case is most unusual as to the degree of improvement, especially considering the age of the man. I have noted that age makes little if any difference in the prognosis.

In considering the treatment of this disease bear in mind the importance of removing all causes which may act as deterrents of that natural circulation of air to which the eustachian tubes and tympani are entitled. First, then, cor-

rect such abnormalities of the nose and throat as may be found, and often these must be diligently sought. A considerable degree of judgment enters into the consideration of this phase of the investigation in learning the effects which varying degrees of even slight irregularities within the nose may have in jeopardizing the sufficient inflow and outflow of pure unvitiated air through the nasal chambers. Even a neophyte in rhinological practice may promptly recognize the deleterious effects of a long thick septal exostosis, or a great hypertrophied turbinal body. He may utterly fail to appreciate the serious consequences which ultimately follow the constant though apparently inconsiderable deficiency in patency of that nose wherein a very large minor degree of cut-off occurs because of a slight thickening of the septal mucosa at a vulnerable point, which when congested creates a crowding of that particular spot against the opposing turbinal which too is likely to swell up in resenting protrusion of the opposite side. Even neighbors within the nose object to crowding. It becomes necessary too to carefully estimate to what degree we may repulse the turbinal which insists on taking up just a bit too much room. Here the judgment of the conscientious doctor is often tested. Oftentimes frequent observations are necessary under varying degrees of atmosphere before the question can be judiciously determined. Give sufficient room for the column of air to pass to and fro with just sufficient resistance that physiological heating, moistening and filtering be done.

Next we may consider the conditions within the pharynx, and here such obstructions as pharyngeal, tonsillar hypertrophies (adenoids) or remnants of such, should be thoroughly and carefully removed and the mouths of the eustachian tubes treated according to their needs with stimulating or alterative topical medication. Nose adhesions and fibrous bands, to which allusion has already been made, require repeated breaking down with the finger nail which has been thoroughly prepared for the purpose, and thus the crypts may be destroyed and the parts subjected to applications of nitrate of silver, iodine in glycerine, or such other treatment as tends to restore the normal condition of this organ. Relief from such symptoms as constant tension within the throat and ears, closure of ears, disposition to force air into ears or to swallow, headache and forgetfulness (which often attend this condition) is usually immediate. This procedure, I say, must be repeated several times until the tendency to reformation has gone.

Faucial, Tonsils: When considerably hypertrophied, especially in the superior lobe thereof, should be remedied. This may even include submerged tonsils whose presence may induce degenerative changes (by virtue of the circulatory influences) in the region of the eustachian tubes. Having cleared the field of all obstruction of whatsoever abnormal sort, it gives nature a chance to re-establish the aerial balance within the tympanum so necessary to proper nutrition, metabolism and other functions.

To assist in this process, judicious inflation with warm clean air, either plain or impregnated with camphor and iodine or camphor and menthol equal parts, may be practised for the purpose of producing a stimulating inflation. Hot air may be injected through an insulated eustachian catheter under graduated pressure.

Treatment with any of the various medicated intra-tympanal air pressure methods had better be done with the utmost care, for while great service is rendered in appropriate cases here again the personal equation of the operator's experience and judgment count for much in determining results. The diagnostic tube should always be worn while treatment is being given. I recall no bad effects attributable to this method of treatment in my own experience, but that such occurs in the hands of the inexperienced or overzealous is well known. In fact, this very observation makes it desirable often to forego this form of treatment in favor of some other, owing to the overstretched condition producing relaxation of the membrana tympani following excessive inflation and indiscriminate use of some form of suction apparatus producing negative pressure. Much could be said on this subject, but this paper is intended not to furnish an exhaustive system of treatment but rather to direct attention to only a few of the many modes of therapy which have been employed.

There are frequent indications for the use of carefully applied suction. Besides the use of the catheter the eustachian bougie is often very necessary and beneficial. Duel's electric bougie in his hands is said to be of great service in overcoming stricture of the tube.

One must not forget the necessity of developing that fine sense of touch so essential in preventing injury to the mucous membrane during any of these procedures, for it is conceivable that

if the integrity of the membrane is impaired by an abrasion and a current of air be blown into the cellular tissue in the region, it would certainly be embarrassing, and might be fraught with danger to the life of the patient.

Where the usual methods of treatment fail and the symptoms are extremely urgent, various medical agents have been used with varying success for the relief of the tinnitus, e. g., the bromides in reasonably large doses tend to help the nervous balance whereby better control is established. Then again those subjects with a history of lues suggest special therapeutic agents as adjuvants of the routine plan.

68 McDONOUGH STREET.

EXTIRPATION OF THE RECTUM FOR ADENO-CARCINOMA BY THE KOCHER METHOD—WITH REPORT OF A CASE.

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Operation upon the rectum for cancer, justifying extirpation of the rectum, should be restricted to such cases in which the tumor can be palpated per rectum, and in which the tumor is still movable. Immovable tumors, or such as cannot be palpated by digital examination from below during profound anesthesia should be regarded as inoperable by the lower route. But such class of cases in which the tumor can be palpated from below and is movable are fit subjects for operation by the lower route and promise good immediate results and fair end results.

When considering methods for operation it is noticeable that the Kraskse operation, (including resection of the sacrum), is losing favor and precedence is given to the coccygeal method which reduces the time of operation and is less dangerous both from the standpoint of sepsis and injury to important nerves—and the vital factor remains—it affords ample room as a field for operation. Kocher above all takes this stand. The coccygeal method is the one he invariably resorts to in all cases of cancer of the rectum suitable for operation.

In selected cases it is an ideal method—cases which have not advanced too far, and in which the anal sphincters are not involved. He extirpates the rectum in toto, like a cyst, without opening the same, and then implants the upper lumen of the gut into the anal region, maintaining perfect control of the sphincters.

In considering the operation it is absolutely essential to keep the field of operation free from fecal contamination, and for this purpose it is necessary to prevent diarrheal oozing during the time of operation, caused by too late or inadequate attention being given to the preparation of the bowels. A thorough catharsis eight days prior to the time of operation, followed by liquid diet and bismuth and opium, to cause constipation for four or five days prior, will effectively prepare the field. The final cleansing is best resorted to under deep anesthesia, with sphincters fully relaxed, just at the beginning of the operation, by thoroughly washing out the lower bowel up to the tumor, preventing, if possible, the solution from entering the upper bowel, so as not to return during the time of operation and so infect the field.

Figure 1. Gross Specimen of Rectum.

The patient is placed in extreme lithotomy position with thighs well flexed. A median incision is made from the anus to the sacro-coccygeal articulation. The coccyx is denuded and disarticulated, hugging the bone closely, so as to avoid the median sacral artery. The incision is then carried down upon the fascia covering the rectum and the rectum is circumvented by the finger in blunt dissection, until freed above the anal opening. Then two clamps, or better, two ligatures, are applied, compressing the lumen lightly, (allowing an interspace), which is then severed between the ligatures by means of the cautery, and the mucus membrane of either end thoroughly charred. The rectum is then loosened by blunt dissection upward, beyond the growth, catching and ligating the bleeding vessels. As soon as the peritoneum is reached anteriorly, it is opened at a seat, as far removed from the

region of the tumor as possible and severed upward and backward toward the margin of the colon. In consequence of the severance of the peritoneum the rectum becomes more movable and can be drawn downward more easily. It is, however, still held by the mesentery of the colon and sigmoid. These, too, are severed if they offer tension. All vessels are carefully ligated. In this manner Kocher has removed 33 cm of gut. The connective and areolar tissue anterior to the sacrum and glands about the hemorrhoidal vessels are also removed.

The next step is the inversion of the anal portion of gut, closed by ligature, through the anal ring. The ligature is severed and the free edge now inverted, clamped with artery clamps, taking care not to cause infection from the mucous surface. Now the upper ligated end of gut is drawn through the anal portion, together with the tumor up to a 3-4 cm beyond the affected portion, clamps are then applied to the sound area protruding outside of the anal opening, and tumor and rectum severed. The two concentric lumena of gut held in concentric juxtaposition by clamps are sewed together (linen thread in this case), that is, the invaginated anal portion and the upper end of the gut drawn through this portion, and after the completion of the sewing, the invaginated anal portion is shoved back through the anal ring. The wound is, in part, packed with gauze for drainage and in part sewed.

The following is a case operated in my hospital service by the above method.

HISTORY. The patient, a man 47 years old, operated November 23, 1909, discharged Jaunary 7, 1910. One and a half years ago the patient began to notice discomfort in defecating. He was constipated but had a constant desire to move his bowels. The impulse was there yet the act of defecation was always unsatisfactory. His discomfort increased gradually and to it was added slight pain during the act of defecation subsequent to which he had a copious discharge of mucus occasionally streaked with blood. During that period he lost 25 lbs. in weight.

He had been subjected to anti-syphilitic treatment. but his discomfort steadily increased, notwithstanding.

The man, on admission to the hospital, looked sick—his features were drawn and anxious, and his action was languid.

EXAMINATION. Three inches above the anal opening was a hard mass, encroaching upon the lumen of the gut, almost to occlusion, and extending in induration to encompass a space in size of a small egg. This mass was painful to the touch, bled easily, irregular in outline, movable, and its upper outline could just be reached by pressing the finger well up into the rectum, around the tumor, with the other hand over the pubis.

The patient made an uneventful recovery—has gained 22 lbs., eats everything, bowels move regularly, free from pain and inconvenience, with perfect control of the sphincters. He attends to his occupation and has regained his buoyancy.

PATHOLOGIST'S REPORT. The specimen sent me consists of a segment of rectum, 5 cm in length, 2.5 cm in diameter, to which is attached a considerable amount of peri-rectal tissue. Almost the entire specimen represents a stenotic adeno-carcinoma of this portion of the gut. The lumen of the gut is markedly encroached upon permitting the passage

Figure 2. Micro-Photograph of Rectum, showing Adeno-Carcinoma.

of a small calibre lead pencil with difficulty. The cancer entirely encircles the gut, the walls of the latter having an average thickness of 12 mm.

Microscopic examination shows the growth to be a typical cylindrical celled adeno-carcinoma. No cancer infiltration of the surrounding peri-rectal tissue or glands is discernable.

Unfortunate conditions may arise and lead to complication when, in consequence of firm adhesion about the tumor or friability of the tumor itself, the rectum is torn. Infection may easily be the result—a serious offense, when so much areolar and connective tissue abound, and consequent stenosis may result owing to the destruction of the peritoneal covering and consequent inability to approximate peritoneal surfaces in sewing the two ends of gut. If the peritoneal surface is destroyed—primarily or due to infection, stenosis is sure to follow.

15 LINCOLN PARK.

LYMPHANGIOMA: WITH REPORT OF A CASE OF MACROGLOSSIA, AND A CASE OF MACROCHEILIA.*

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SALT LAKE CITY, UTAH.

"A lymphangioma is characterized by the formation of new lymphatic structures, the process extending to places in which normally no lymphatics are found." (Senn.)

"Hyperplasia of the connective tissue often accompanies ectasia of the lymph vessels." (Ziegler.)

A lymphangiomatosis of the tongue is known as macroglossia, of the lip as macrocheilia.

Hektoen classifies lymphangiomata as of two kinds—true tumors in which new growths of lymph vessels take place, and tumors arising from dilatation of pre-existing lymph channels, or from their hypertrophy. Sub-varieties are found depending on morphologic peculiarities, namely, capillary, cavernous and cystic.

Capillary lymphangioma is composed of lymph spaces and hypertrophied lymphatic vessels which constitute an anastomosing network. The cavernous variety is composed of a framework of connective tissue with communicating spaces which contain lymph.

The cystic form presents macroscopically an appearance of convolutions of large and small vessels with translucent walls containing lymph. These vessels are dilated new lymphatic vessels which have partially or wholly lost their connections with the lymphatic system. Sometimes these cysts contain chyle (chylangioma).

When found beneath the skin of the neck a lymphangiomatosis has been described as a hygroma. Senn says the tumor may extend in an upward direction as far as the neck and downward as far as the mediastinum. In the neck the tumor follows the direction of the lymphatics, along the large bloodvessels and the intermuscular septa. Some of these tumors are transformed into hemo-lymphangiomata.

Multilocular lymphangioma has been found in the mesentery, in the lungs and in the kidney.

The essential pathological condition in certain pigmented birth-marks, freckles and cutaneous warts, is a local dilatation, or hyperplasia of lymph vessels, more or less diffuse.

Histologically lymphangiomata are characterized by their resemblance to lymph vessels, or lymph spaces, found in healthy tissue. Scattered through the connective tissue islands of small round cells (lymphocytes) often abound.

Many of the lymphangiomata are congenital in origin, as seen in macroglossia and macrocheilia. Others are of post-natal origin, some instances of their development in old age having been seen. Both the congenital and acquired forms may show not only a dilatation and hypertrophy of the normal lymphatic channels, but a new formation of lymph channels.

Lymphangiomata are benign, but as they are composed largely of endothelial elements, they may be transformed from a lymph-vascular neoplasm to one or other of the varieties of endothelioma (Hektoen).

Microscopically, macroglossia often presents more the appearance of hyperplasia of the tongue than that of dilated lymph channels (Senn). Young muscle fibers are met with which proves that the muscular tissue is also increased in quantity. Macroglossia in the later stages may show angiomata as well as multilocular lymph-cysts.

Ulceration may be produced, the result of pressure from hyperplasia beneath, or irritation of the surface. Fatty degeneration and calcification are the most frequent form of retrograde tissue metamorphosis of the connective tissue stroma of lymphangiomata. Cystic degeneration also occurs. Aseptic thrombi occur in this condition. Septic thrombosis gives rise to inflammation of the neoplasm. Macroglossia and macrocheilia can usually be recognized without much difficulty. All the involved tissues are hypertrophied.

PROGNOSIS. As in the case reported, great enlargement of the tongue may interfere with speech, mastication and deglutition. There is liability to infection and more rarely to transformation into sarcoma. The condition sometimes recurs, as in a case operated at St. Marks Hospital by Dr. U. Worthington, which had previously been operated upon by another surgeon.

TREATMENT. Where practical, the proper treatment of lymphangioma is excision. In macroglossia, if the swelling interferes with mastication, speech or deglutition, the proper treatment is partial excision.

In macrocheilia, partial or complete extirpation is indicated for cosmetic purposes as well as a prophylactic measure against infection or malignant degeneration. In the case reported, by means of a wedge-shaped excision parallel with the long axis of the lip, the latter was reduced to normal size.

*Read before the Western Surgical Association, December, 1909.

Report of Cases.

Macrocheilia. April 6, 1909. Man, aged twenty-three; American; seen in consultation with Dr. A. N. Minear. Family history: negative. Personal history: patient states that his upper lip has been abnormally large since birth. During the last three years the condition has been much more troublesome. Examination showed a diffuse symmetrical swelling of the upper lip, which was enlarged to about three times its normal size and presented an eversion of the mucous surface with a fissure centrally located.

Operation. A wedge-shaped incision, parallel with the long axis of the upper lip was performed. The result cosmetically and functionally was satisfactory.

The diagnosis in the case was made on the clinical history and macroscopical appearance.

Macroglossia. October 11, 1909. Boy, aged seven years; American. Family history: Father living; in good health; aged thirty-seven years. Mother also in good health; aged thirty-six years. Four sisters and one brother; all well. Personal history: With the exception of the condition of his tongue, he has always been healthy. His parents stated that his tongue had always been larger than normal since birth. About five years ago they noticed an increase in the swelling of his tongue, accompanied by white patches on the lingual surface. The tongue has gradually but slowly increased in size, until at present it presents a thickening involving the anterior two-thirds of the organ, which has increased to twice its normal diameter. The surface of the tongue is furrowed with three distinct fissures. The papillae are red, roughened and enlarged. On palpation it feels slightly harder than normal. (See picture.)

The area of the tongue showing distinct involvement measures 2½ inches antero-posteriorly, and two inches laterally. The sides of the tongue are smooth; the upper and lower surfaces show distinct irregularities. Various small areas of whitish exudate cover the upper and lower surfaces of the organ. There is impairment of speech, and some difficulty in mastication and deglutition. Adenoids are present in the throat.

October 13, 1909. Removed the adenoids. This was followed by treatment of the mouth and throat with mild alkaline, antiseptic spray, etc.

October 30, 1909. Removed anterior portion of tongue (about two inches) by wedge-shaped incisions. I began with chloroform, which the patient took badly, and changed to ether. Junker's apparatus was used after getting the patient anesthetized by the drop method. The tongue was held by two heavy silk traction ligatures, inserted about one-half inch from tip, a blunt pointed, curved needle (Cullen's liver needle) being used. Two transfixation control sutures on either side of the tongue posterior to the area to be removed were inserted in the medium line of the tongue and tied on each side, thus transfixing the organ and by traction minimizing the bleeding. (See Fig.)

The anterior portion of the tongue was removed wedge-shaped. The lingual arteries were grasped with forceps and tied with catgut ligatures. Some oozing persisted from the cut surface of the tongue, which was controlled by tying the catgut sutures. The upper and lower cut surfaces were then sutured with silk, each ligature being fastened with two perforated compressed shot. The ligatures were left long to facilitate removal. The posterior transfixation sutures were allowed to remain on the tongue temporarily. With the exception of about one-half an inch at the tip of the tongue where the stitches tore through, the wound healed by primary union.

A few days later, in order to get a perfect union, I resorted to a new method. The anesthetic used was ether. The head was turned to one side and a long large wick of gauze was inserted in the angle of the mouth to drain the saliva, blood and mucus out of the oral cavity.

The tongue was held by the traction and transfixion sutures as before (four being used). The edges were freshened by incisions, and sutured as before, with the exception that the ligatures were cut short. A tension suture of heavy silk was placed transversely through the tongue, about one-half inch posterior to the tip, and held in position by two perforated silver plates, each about one-half inch in diameter, with two perforated, compressed shot fastened external to the plates. The sutures were removed on the third and fourth day. Accurate, primary union was secured. The pain during mastication and deglutition is entirely relieved. The power of speech is practically normal.

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The X-Ray in Rodent Ulcer.

Rodent ulcers readily respond to *x*-ray treatment. They quickly scab over, the scabs drop off, and the ulcer heals up. If the applications are continued at somewhat long intervals for a considerable time after the growth has apparently been cured the result is permanent, but if treatment is stopped as soon as healing appears to have taken place there is sometimes a recurrence. For some reason or other it appears to be very difficult to get the ulcer to heal up a second time with the *x*-rays. In such cases, if the ulcer be small, healing may be promoted more readily by the application of radium.—James Metcalfe in the *British Medical Journal.*

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, MAY, 1910.

ANNOUNCEMENT.

DEPARTMENT OF SURGICAL SOCIOLOGY.

Among the laity, the term surgeon often conveys no more definite impression than that of a battery of cold, well-tempered knives.

The honest and sincere sympathy for the race as evidenced by the surgeon's efforts, has too frequently been misunderstood. Many of the lay journals repeatedly declare that surgeons are not alive to their opportunities in behalf of the human species. All too numerous are the criticisms,—and they are not without some foundation,—that preventive medicine is being developed into organic living institutions by humanitarians and sociologists rather than by physicians. The extensive and valuable knowledge long possessed by the surgical fraternity is rapidly becoming common property, and society is asking how best to use it for the benefit of humanity.

We believe that the surgical profession should be among the leaders in the movements towards better social conditions. We believe that surgeons are essentially humanitarians and are interested in all projects pertaining to a lessening of the number of accidents and diseases which human flesh is not heir to but have cruelly thrust upon it.

To encourage among surgeons this interest in the broader social duties of their professional responsibilities and to stimulate them to leadership in those social matters that essentially concern them, we have determined to inaugurate in THE AMERICAN JOURNAL OF SURGERY an editorial department devoted to Surgical Sociology. This department, which will be begun in the June issue, will be conducted with the collaboration of Dr. Ira S. Wile, of New York, who, although not a surgeon, has been for several years actively identified with medical sociology and who is familiar with its varied aspects.

We are especially encouraged to the introduction of this feature in THE AMERICAN JOURNAL OF SURGERY by the consideration that no medical, and certainly no other surgical, journal provides it, and no philanthropic or lay publication addresses itself to the strictly surgical problems to which this department will be confined. Broadly, it will consider various phases of the relations existing between the needs of society and the responsibilities of the surgical profession. More specifically, it will concern itself with the prevention of surgical diseases and injuries. Industrial accidents and safety devices; "Fourth of July injuries"; the care of cripples and those otherwise handicapped by surgical afflictions; special hospitals, clinics, sanatoria and convalescent homes; some surgical aspects of district nursing, playgrounds and factory regulations; the prevention of blindness—at birth and in the factory; social conditions that affect pregnancy and parturition—these are some of the many problems with which we shall deal. Essentially an editorial department, we shall be glad to receive and, to the extent that space will permit, to publish communications and suggestions; and we invite the contribution of original articles devoted to phases of Surgical Sociology.

Preventible surgery is largely due to bungling in the social system and is essentially unjust.

> "Wise men ne'er sit and wail their loss,
> But cheerly seek how to redress their harms."

To-day we should change the line to read:

> "But cheerly seek how to prevent such harms."

To patiently endure preventable accidents and diseases is to submit quietly to an unmerited lash. The surgeon is a surgeon, to be sure, but he is anxious to teach the community that it is more blessed to give protection than to receive the lame, the halt and the blind.

This, then, the spirit in which the department of Surgical Sociology will be launched, in the belief that it will interest and quicken our

many readers, and in the hope that, with their encouragement, it will grow in size and in influence to take a place among the forces that are making for social betterment.—W. M. B.

THE PREVENTION OF INDUSTRIAL ACCIDENTS.

States are rising in arms against preventable diseases, such as tuberculosis, yellow fever and bubonic plague. The occasional leper, whose ailment has perchance been diagnosed, is hounded from state to state. A virtuous citizenship revolts against the spread of typhoid fever by polluted water supplies or by the filthy habits of the "typhoid fly." But surgical conditions have not been made the subject of a searching study by sociologists and humanitarians—else the question of the prevention of industrial accidents would be receiving greater attention.

Mr. Hoffmann (Bulletin 78, U. S. Bureau of Labor), states that 15,000 working men are killed and 500,000 men are annually injured in the industries of the United States. While figures upon the subject are scarce, it is noteworthy that the investigation of the State Commissioner of Labor in Minnesota revealed the startling fact that 60 per cent. of the killed and injured were workingmen under 30 years of age. The same Commissioner of Labor declares that one-half of all industrial accidents are preventable! In other words, much of the surgery of industrial centers arises from preventable causes.

This wastage of human life at the period of youth, vigor and enthusiasm demands correction. The surgeon who sees the results of accidents might well pause to seek the cause. The mines of Europe kill only from 1 to 2 per 1,000 men employed. In 1907, in the United States, 3,125 miners were killed, a mortality rate of 4.86 per 1,000 men employed. Are men cheaper than methods of prevention?

Waving aside all figures showing the economic loss to the workingmen, their families and the community, losing sight of the immense loss through liability insurance and the costs of damage suits, even dismissing from thought the actual cost in hospital and dispensary expenditures, surgical fees and surgical supplies, we ask for the sake of the workingman that adequate protection be given to lessen his surgical burden of preventable accidents!

In this connection we rejoice that an American Museum of Safety has been organized* for the purpose of enlightening employers and employees, and the public generally, of the most satisfactory means of preventing industrial accidents. Similar museums exist in Berlin, Paris, Vienna, Milan, Munich, Stockholm, Budapest, Zurich, Amsterdam and Moscow. All save the museum at Vienna are supported by the state.

The duty of the surgical profession is clear. Whenever possible, its united voice should be raised in behalf of beneficent prevention of industrial accidents. Prevention of accident is as essential to the welfare of the nation as the prevention of disease.—I. S. W.

* Exhibit Hall for Accident Prevention, Engineering Building, 29 West 39th street, New York—Wm. H. Talman, Director.

Surgical Suggestions

Subacute osteomyelitis at the mid-shaft of the tibia is often post-typhoidal.

Passing a catheter often cures post-operative abdominal pain not relieved by other means.

Surgery is meddlesome therapy in the vast majority of cases of acute hemorrhage from gastric ulcer.

"Sexual neurasthenia" in the male not infrequently depends on disease in the posterior urethra.

Loud buzzing in one ear should make one suspect arteriovenous aneurism at once.

Perforation may be the first serious sign of carcinoma of the pylorus as well as of ulcer.

There is often a "clear interval" after a stab wound of the heart, similar to that following laceration of the middle meningeal artery.

To the present, the best results in the treatment of injuries of the lungs have been obtained by conservative therapy.

In most exploratory laparotomies the seat of disease may be discovered by tracing the attachment of an adherent portion of omentum.

Glycerine dressings covered by rubber tissue, are frequently more useful than the ordinary wet dressings in reducing inflammatory swelling and in relieving pain.

Books Received

The Blood in Health and Disease. By R. J. M. Buchanan, M.D., F.R.C.P., Professor of Forensic Medicine in the University of Liverpool; Honorary Physician to Out-Patients, Liverpool Royal Infirmary, etc. Octavo; 318 pages; 20 plates and 28 drawings. London: Oxford University Press, 1909.

Many volumes on hematology have been issued but there is always room for a practical work such as Buchanan has endeavored to prepare. He has omitted reference to malarial and parasitic diseases, and gives no reference to the numerous serum reactions. Credit must be given for the excellence of the plates, drawn by the author from his own preparations. The cuts and typographical work are of especially high standard.

Most noticeable is the absence of any comment upon Arneth's work on nuclear lobulation. It is regrettable that Buchanan has given no attention to the question of relative leucocytoses in infectious diseases or to the value of a comparison of the relative leucocytosis to the total leucocyte count in septic infections.

Sulphhemoglobinemia is not even mentioned.

In considering the coagulation time, there is a full discussion of the various technics advised, but strangely there is no statement regarding the normal coagulation time in health.

The estimation of the calcium salts in blood, according to the method of W. Blair Bell, is given in detail.

In the discussion of specific gravity the author might well have added a table showing the relation between the specific gravity of blood and its hemoglobin percentage. The pages devoted to opsonic index are unsatisfactory and indefinite. No reference is made to vaccine dosage nor is the idea of the "negative phase" made intelligible. The page on blood culture could have been omitted as it is misleading and apparently the subject outside the author's experience. Similarly the single page on Widal's reaction gives too vague a description to be of service to one unfamiliar with the technic. Brevity has also destroyed the description of Stengel's method of leucocytometry.

Praise is certainly due the splendid pages referring to the examination of the blood by means of cut sections. A contradiction occurs in the discussion on platelets. On the same page (114) the author refers to platelets as "citefacts produced during the process of examination" and then mentions their increase and decrease in various pathological conditions. The work of Wright or Pratt is overlooked entirely, much to the damage of the section.

In the paragraphs on leucocytes no mention is made of physiologic variations of different leucocytes, nor is reference given to the variations of the different types of leucocytes at various ages. Gundlobin's table of leucocyte variations in infancy and adult life is given later, but without the discussion necessary for its interpretation. The diagrammatic scheme of the postnatal generation of erythrocytes and leucocytes makes the myelopla or giant cell of the marrow their common ancestor. Few men will agree with this plan of hemogenesis.

The entire question of lymphocytosis is passed over in thirty lines. Eosinophilia is regarded as of "doubtful diagnostic value." The introduction of dissectation on treatment of the various types of anemias is out of place in a work on hematology and in future editions it might better be omitted, along with the consideration of the symptomatology of all the types of anemia.

The nomenclature of the book is fairly conservative. A new word like erythremia can hardly take the place of the old term polycythemia. Under chloroma there is a departure in the way of giving an elaborate clinical history and full description of a case.

The author states that Forsyth, of Liverpool, "has found tubercle bacilli in the blood in a large proportion of cases." No technic is given nor mention of the types of cases. The chapter dealing with the blood changes due to the action of certain poisons is short but excellent.

Despite these numerous criticisms, the book contains much that is a contribution to hematology and makes the volume a welcome one for the hematologist.

Chemical and Microscopical Diagnosis. By Francis Carter Wood, M.D., Professor of Clinical Pathology, College of Physicians and Surgeons, Columbia University, New York; Pathologist and Attending Physician to St. Luke's Hospital, New York. *Second Edition.* Large Octavo; 767 pages; 192 illustrations in the text and nine colored plates. New York and London: D. Appleton & Co., 1909.

In reviewing the first edition of this popular text-book we drew attention to the clearness with which each step of the many tests enumerated was described. The present edition has, if anything, improved upon this standard. The book deals with the blood, examination of gastric contents, the feces, parasites, oral and nasal secretions, the sputum, the urine, transudates and exudates and milk, and contains an appendix dealing with useful laboratory odds and ends.

The additions and changes most worthy of comment are as follows: Sahli's desmoid reaction and Schmidt's nucleus test for testing the stomach and pancreatic secretion are given. Folin's new methods for determining ammonia and creatinin, and all the newer ways of estimating B-oxybutyric acid in the urine are fully gone into. Cammidge's reaction is also given, but commented on with reserve.

All the newer diagnostic methods—the tuberculin tests, Wright's opsonic index, the rapid determination of rabies by means of the Negri bodies, Kala-Azar, the Wassermann reaction for the diagnosis of syphilis, and the hemolytic tests necessary before transfusion is permissible, have been added by the author in a clear and incisive way. His long experience as a teacher enables him to point out the usual stumbling blocks and how to avoid them.

In American literature there is no book on this subject more practical and complete.

Essentials of Laboratory Diagnosis. Designed for Students and Practitioners. By Francis Ashley Faught, M. D., Director of the Laboratory of the Department of Clinical Medicine, and Assistant to the Professor of Clinical Medicine, Medico-Chirurgical College, Philadelphia. Octavo; 309 pages, 34 illustrations and 7 plates. Philadelphia: F. A. Davis Co., 1909.

In this work the author has endeavored to present in concise fashion the "essentials" of those laboratory methods that are generally included under "clinical pathology." In his efforts at condensation he has succeeded well—too well, indeed, for he has squeezed out rather too much. For example, the sections on blood microscopy are inadequate—except, perhaps, as a bare outline to assist those who have some familiarity with the subject from other sources.

Although the work contains a skiagram and two sketches of the stomach outlines and three illustrations of blood pressure apparatus, there is not a single drawing of the microscopic appearance of blood cells, or blood organisms, or of milk or bacteria! As an example of incompleteness for which the plan to present only the simple methods surely offers no excuse, the India ink method of demonstrating the spirochaete pallida is not mentioned. The "dunkelfeld" apparatus, for which the above method is a simple substitute, is not referred to, either.

The book contains sixteen sections: The microscope, the sputum, the blood, opsonic method, blood-pressure, coagulation, blood-parasites, animal parasites, determinations of the functions of the stomach, the feces, the urine, the cerebro-spinal fluid, the body fluids, human milk, bacteriologic methods, and an appendix on laboratory equipment and reagent formulas.

The author (or proof-reader) has been guilty of jumbling the names of diseases and their provoking organisms, and has overlooked bad English, misspellings and faulty

terminations. On page 100 we find "Trypanosomiasis. This is the organism of the so-called sleeping sickness." The opposite mistake occurs on page 30; "Distomum pulmonale. This is a disease of the lungs." In the next sentence an unheard-of biological illusion is recorded: "It is due to the presence of a worm which, by causing hemorrhage, may be mistaken for phthisis." Equally astonishing and much more confusing is the sentence in the section on estimation of the total solids of the urine: "The normal average weight of solids is sixty-five grams." (Page 171). Faught also tells us that for the examination of human milk the sample should be a mixture of portions taken "at separate intervals." On pages 38 and 42 are printed "cc." instead of "cu. mm." We find also such spelling as diplococcus pneumonii (page 248), and on page 253 "bacillus . . . . capsullatus," "bacillus pyocyaneous" and "micrococcus gonorrhea."

For purpose of quick reference to formulae and technic we recommend this concise manual. Beyond that, we must regard as rather exaggerated the statement that "this book should be in the possession of every medical student and most practicing physicians," which we find in the introductory note by Professor Judson Doland—a note that is only an advertisement of the work and is therefore in poor taste.

Das Lymphgefassystem. Von DR. PAUL BARTELS, Privatdozent der Anatomie und Anthropologie an der Universität Berlin; Octavo; 280 pages, 77 illustrations; Jena: GUSTAV FISHER, 1909. 12 marks.

This book constitutes the seventeenth number of the Handbuch der Anatomie des Menschen, edited by von Bardeleben. The author expounds the subject of the anatomy of the lymphatic system with characteristic German thoroughness. After a cursory historical survey, the methods of preparation and injection of the lymph vessels are set forth in detail and the mistakes and errors in interpretation are duly emphasized. The succeeding chapters are concerned with comparative anatomy (only invertebrate animals are included), development, the microscopic anatomy and the general morphology of the lymph system. The second, and by far the larger part of the book, is devoted to the detailed morphology of the thoracic duct and the lymph nodes. In the description of the various lymph node groups, the author includes the regional supply and a short account of practical anatomy.

While not applicable to students, the book is a mine of information and is invaluable for purposes of reference. To those contemplating research in this interesting field, it is well-nigh indispensable. The author's rather extensive labors and his thorough tillage of the literature (844 publications are referred to in his bibliography) have combined to impart to his work an authoritative character. The illustrations are nearly all original, many of them colored, and all are splendidly executed.

Pathologisch-Anatomische Diagnostik. Nebst Anleitung zur Ausführung von Abduktionen Sowie von Pathologisch-histologischen Untersuchungen. Von DR. JOHANNES ORTH, A. O., Professor der Allgemeinen Pathologie und Pathologischen Anatomie, Direktor des Pathologischen Instituten in Berlin. *Siebente und vermehrte Auflage.* Octavo; 767 pages, 438 illustrations. Berlin: AUGUST HIRSCHWALD, 1909. 16 marks.

While familiar to every student of German medical literature, Orth's Pathologic Diagnosis has not received in America the attention it merits. Written by one of the foremost living pathologists, its text bears a degree of authoritativeness which few similar works possess. There is hardly a sentence in this book, no matter how trivial, which is not the expression of the author's experience. Moreover, Orth is a teacher of long experience and knows how to place his facts to the best advantage.

This work is not intended as a complete treatise on pathological anatomy, but as a review of the subject in its broadest outlines, so that it shall serve as a working guide for the autopsy room. The preponderating mass of the text is therefore devoted to gross anatomy, only such microscopical anatomy being included as is important for diagnostic purposes. After a short chapter on the technic of autopsy and general methods of preservation and staining of pathological material, the author devotes a chapter to the external examination of the body and to the examination of skin lesions. The various organs of the body are then discussed in order.

The author eschews all pathological problems and in controversial questions his decisions are concise and unequivocal. The work, as a whole, is marked by individuality.

After a rather careful perusal of the text, we find only one statement with which we differ. The method of taking blood cultures by pricking the lobe of the ear is no longer regarded with favor by bacteriologists. The illustrations are nearly all original, and with some exceptions are well executed. The index is more complete than that which we expect to find in a Teutonic book.

Contributions to Abdominal Surgery. By the late HAROLD LESLIE BARNARD, M.S., F.R.C.S., Surgeon to the London Hospital. *Edited* by JAMES SHERREN, F.R.C.S., Surgeon to the London Hospital; Surgeon to the Poplar Hospital for Accidents, etc. Octavo, 391 pages. New York: LONGMANS, GREEN AND CO., 1910.

When Barnard, who had earned a wide reputation as a teacher, died in the midst of a brilliant career, he left as a legacy his practically completed studies of abdominal surgery. These the editor has fitted together and has also added some of Barnard's published works.

The volume deals with intestinal obstruction, gastric surgery, the simulation of acute peritonitis by pleuropneumonic diseases, three lectures on acute appendicitis, and the surgical aspects of subphrenic abscess. Two hundred and fifty-four pages are devoted to the subject of intestinal obstruction. It is treated most exhaustively and thoroughly, and in so interesting a style that, in reading the monograph our attention never flagged. We believe that the work fully equals Treves' classic on intestinal obstruction, and in point of exhaustiveness surpasses it. The only adverse criticism we would offer concerns the brief and incomplete way in which the operative treatment of intussusception is discussed.

In a brief review of this excellent and instructive book we cannot enter into details on the various subjects, but we would call attention to the splendid chapter on the surgical aspects of subphrenic abscess. It presents very little that is new, yet the facts are so logically and clearly dealt with and so well arranged, that even the well informed will obtain many new viewpoints, we believe.

The author's style is always concise and lucid. There are numerous illustrations, for the most part clear and instructive. The publishers are to be commended on the neatness and care with which the book has been prepared.

Modern Surgery. General and Operative. By JOHN CHALMERS DA COSTA, M.D., Professor of Surgery and Clinical Surgery in Jefferson Medical College, Philadelphia; Surgeon to the Philadelphia General Hospital, etc., etc. *Sixth Edition,* Revised and Enlarged. Large octavo; 1,502 pages; 966 illustrations. Philadelphia and London: W. B. SAUNDERS CO., 1910.

In the review of the fifth edition of Da Costa's "Modern Surgery" (1907) we expressed the opinion that this is the best single-volume text-book of general surgery in the English language.

We can add nothing to this praise, and the sixth edition affords no reason for subtracting from it. Again we remark the thorough sifting of recent literature that formed the basis of the revision, the increase in size of about 200 pages, and the incompleteness of the nevertheless extensive index. Here and there the proof-reading of proper names has been faulty.

Handbook of Obstetrics. By R. CADWALLADER, A.M., M.D., Assistant in Obstetrics, University of California, Medical Department. Duodecimo; 370 pages; 104 illustrations. Philadelphia: F. A. DAVIS CO., 1908.

This is a convenient manual, in which condensation has been effected without the sacrifice of practical information or personal observation. In its succinctness lies the especial merit of the work. The half-tones are rather crude.

Progress in Surgery

A Résumé of Recent Literature.

Compensatory Hypertrophy of the Small Intestine Following Resection of Large Portions of the Jejunum and Ileum. J. M. FLINT, New Haven. *Yale Medical Journal,* February, 1910.

In an exceedingly painstaking experimental and clinical study the author arrives at the following conclusions: As much as 50 per cent. of the total small intestine in dogs may be removed without fatal results. The animals may gradually return to a condition of practically normal weight and metabolism when maintained on a favorable diet under good conditions. Resections of 75 per cent. and more of intestine may be survived, but such animals are not liable to true recovery, *i. e.,* a return to normal weight with the establishment of a good compensatory process. At first, the animals suffer from a severe diarrhea, ravenous thirst and appetite, and loss of weight, from which they gradually recover. They remain, however, extremely sensitive to unfavorable conditions of diet and living. The compensatory process consists in hypertrophy as well as hyperplasia of the remaining portion of the small intestine. Computation makes it probable that in favorable cases approximately the original epithelial area is restored by the hypertrophic process. No regeneration or hypertrophy has ever been reported in a human case. From the metabolic studies, it would seem wise to give these patients a rich and easily assimilable diet, poor in fats and relatively rich in carbohydrates.

A Simple and Efficient Operation for Hemorrhoids. N. PARRIT. *Lancet,* February 5, 1910.

The sphincter having been stretched one of the hemorrhoidal masses was seized with vulsellum forceps and pulled well out of the anus. It was encircled with a loose purse-string suture of fine Pagenstecher's thread. Above the purse-string suture entered the healthy rectal mucous membrane beyond the hemorrhoids; below it took up that just within the anus; whilst at each side it was inserted far enough apart to allow the blades of the crushing instrument to grasp the base of pedicle of the pile seized. It is essential that the pile be pulled well down. As soon as the purse-string suture is placed the base of the pile is crushed. Parritt used a Corner's appendicectomy clamp, but a pair of hemostatic forceps with blades long enough to overlap the base of the pile would be suitable. When the clamp is released a broad flat layer of crushed tissue connects the pile with the rectum. The pedicle is now folded once upon itself by giving a half-turn to the pile, the clamp is re-applied, and the crushing is repeated. When the clamp is removed something like a pedicle has been made, but another half-turn, followed by another crushing, leaves nothing more than a fine pedicle of crushed tissue. This is tied with a fine ligature beyond the clamp, and the clamp is finally removed. The pile is then snipped away through the crushed pedicle. The stump of crushed tissue with the ligature upon it is then buried by drawing tight and tying the purse-string suture already inserted. Other portions of the mass are isolated and removed in the same way.

Treatment of Carcinoma with the Body Fluids of a Recovered Case. A Preliminary Communication. EUGENE HODENPYL, New York. *Medical Record,* February 26, 1910.

Hodenpyl saw a patient who four years ago had a carcinoma of the breast which was followed by numerous metastases, especially in the liver. The abdomen became filled with a chyliform ascites. The patient's death appeared imminent; but surprisingly enough, the tumors began to disappear and the liver became smaller and smoother. To-day, with the exception of the frequently recurring ascites, there is now no indication of the original disorder. The ascitic fluid was placed at the author's disposal and after demonstrating its harmlessness to human beings and its destructive action upon the carcinomata of mice, he injected the fluid into patients afflicted with cancer, many of them hopeless and inoperable. Thus far, he has had 47 cases. A local redness, tenderness and swelling is induced, followed by a "softening and necrosis of the tumor tissue, which is absorbed or discharged externally. In all cases the tumors have grown smaller; in some instances they have disappeared altogether." Detailed reports of his results will be submitted in a later communication.

Two Signs of Diagnostic Value: One in Cholelithiasis, the Other in Incipient Pulmonary Tuberculosis. ROBERT ABRAHAMS, New York. *New York Medical Journal,* January 8, 1910.

The sign for cholelithiasis consists in the production of sharp pain by sudden pressure into a point midway between the umbilicus and the ninth costal cartilage. The author has found this sign unfailing as a diagnostic symptom of cholelithiasis and has verified it repeatedly at operation. When this sign disappears in a patient long under observation, the author believes that the gall-bladder has emptied itself.

The sign for pulmonary tuberculosis consists in a higher surface temperature over the lung affected.

Some Points in the Treatment of Nerve Injuries. JAMES SHERREN, London. *British Medical Journal,* January 15, 1910.

In the suture of divided nerves it is essential to obey the following three rules: 1. The suture material must be absorbable; the author employs the finest catgut. If non-absorbable material is used, disagreeable symptoms are likely to arise months after. 2. The nerves must be surrounded by Cargile membrane in order to prevent adhesions to the surrounding structures. If this is not done, an imperfect recovery is liable to take place. 3. After wounds in the region of the wrist, the deep fascia should always be sutured. If this is not done, the tendons become adherent to the skin, interfering with their mobility.

In order to obtain perfect recovery after suture of a nerve, it is essential to pay much attention to the after-treatment. This consists in daily massage of the affected muscles, and in maintenance of their relaxation by suitable splints until their voluntary power has been restored. This treatment must be kept up for months, and for larger nerves for a year or longer.

In amputations of the finger, the proper division of the nerves is usually neglected by surgeons. Having seen a number of painful stumps, Sherren recommends that in finger amputations, as in the larger parts, the nerves be drawn out and cut short. When a painful stump of a finger has already occurred, the author emphasizes the necessity of operating as early as possible; if this is not done, the tenderness is liable to spread to other nerves; hysteria and muscular affections are likely to ensue and the prognosis becomes highly unfavorable.

On the Coagulation of Blood During Menstruation (*Ueber Blutgerinnung während der Menstruation*). G. M. CRISTEA and W. DENK, Vienna. *Wiener Klinische Wochenschrift,* February 17, 1910.

These authors found that the menstrual blood, or in fact any blood that passes through the endometrium (*e. g.,* in extrauterine pregnancy and metrorrhagias) is nearly always uncoagulable. They found that this uncoagulability was due to the fact that the endometrium either withholds or destroys the fibrin ferment. The blood of women during the menstrual period does not differ in coagulability in any way from the normal.

Notes on Tenotomy of the Tendo Achilles in Complicated Fractures of the Lower Extremity. W. T. THOMAS, Liverpool. *The Liverpool Medico-Chirurgical Journal,* January, 1910.

There are certain types of fracture of the lower extremity which are liable to be followed by an imperfect result owing to the fact that deformity has not been overcome by the usual methods. Such fractures the author

designates as follows: 1. Lower end of the femur. 2. Oblique fractures of the tibia. 3. Fractures of the tibia low down. 4. Fractures of the os calcis. In these fractures the chief deforming agent is the gastrocnemius and it is essential that the mechanical traction of this muscle be overcome. The author believes this can best be attained by simple division of the tendo achillis. The author has performed this operation 15 times and has been extremely satisfied with the results. He also suggests tenotomy in separations of the femur epiphysis, and dislocations of the astragalus.

On the Treatment of Bone and Joint Tuberculosis with X-Rays (*Von der Behandlung der Knochen- und Gelenkstuberculose mit Röntgenlicht*). ISELIN, Basel. *Deutsche Zeitschrift für Chirurgie*, January, 1910.

Very brilliant results are reported by the author by the employment of this hitherto rarely used method of treatment. Iselin reports 20 cases of bone and joint tuberculosis, many of them in cases in poor condition and presenting other tuberculosis foci. All the patients were ambulant ones and received no other treatment. Some of the cases were tuberculosis of the open variety; others, fungating. Some of the cases healed while becoming worse because of some other tuberculosis focus (in one case a carcinoma). In his study extending over two years, Iselin found only four recurrences. The deep-seated joints were not treated because of the doubt concerning the depth to which *x*-rays penetrate. Children were also not treated because of the injurious effect *x*-rays have on epiphyseal growth. Aluminum plates were placed over the part treated in order to exclude all but the penetrating rays. The author presents the details of the method of treatment, details which are essential if one would obtain good results.

The Technic of Colopexy for Prolapse of the Rectum (*Technique de la Colopexie pour Prolapsus du Rectum*). QUÉNU and DUVAL, Paris. *Revue de Chirurgie*, February, 1910.

Impressed with the poor operative results of the treatment of prolapsus the writers determined to find an operative procedure which would re-establish the normal position of the pelvic colon and the superior portion of the rectum. At the same time, the abnormally deep Douglas' sac would be made shallower. Quénu and Duval have practised the following operation successfully in three cases (two of whom have been traced for two years):

Median incision in the hypogastrium. The sigmoid is drawn up strongly and Douglas' sac is obliterated by two purse-string sutures. These pass through the rectal wall and the posterior vaginal wall (in the male, posteroinferior surface of bladder). The sigmoid is then drawn to the left and is sutured in this position to the posterior surface of the broad ligament near its base. The approximation should extend over the entire width of the left half of the broad ligament. The remainder of the sigmoid is sutured to the parietal peritoneum to the left of the incision along the long axis of the incision. By this method of colopexy the authors believe that the sigmoid is placed and will remain in an almost normal position.

Ureteral Calculi (*Des Calculs de l'Uretère*). JEANBRAU, Montpelier. *Annales des Maladies Génito-Urinaires*, Vol. I, Nos. I and II.

This is a thorough and critical study of the clinical aspect of the subject. After the consideration of the anatomy of the ureter, the author points out that most calculi are arrested at its two physiological isthmuses near the upper and near the lower end of its course. The number of calculi in a ureter may vary from one to 27. Not infrequently they are bilateral. They vary greatly in size and form—in general they are elongated.

The calculi may be movable, impacted, or encysted. Depending on the amount of impaction and infection the ureter above may be greatly distended and infiltrated. Hydronephrosis may be the result of even a small impacted calculus. In 13 per cent. of the cases of ureteral, stone calculi were present in the corresponding kidney. Pyelonephritis was present in 12 per cent. of the cases.

It is not very uncommon for calculi to remain in the ureters for years without giving rise to any symptoms. Usually, however, symptoms arise sooner or later from one or more of the following conditions: 1. Migration and impaction, leading to reno-ureteral or ureteral colic, reflex phenomena, and changes in the urine, particularly microscopical hematuria. 2. Passage along the ureter to its juxta-vesical on intra-vesical portion. Being closely related to the vas deferens, the seminal vesicle, the bladder and the rectum in this region, an impacted stone may here give rise to symptoms referable to these organs. There may be symptoms of vesical irritability, nocturnal painful pollutions (painful ejaculation, haemospermia, etc.), pain in the testicle, pain in the rectum. 3. Obstruction with or without infection. Depending upon whether infection is present or not, ureteral crises of pain may or may not be accompanied by fever with its associated phenomena. Pyonephrosis and anuria are late sequelæ.

The prognosis depends upon whether the calculus remains in the ureter or is passed or removed. Every calculus remaining in a ureter sooner or later leads to the destruction of the corresponding kidney. At the same time anuria is inevitable if the opposite ureter should become blocked.

Various methods should be employed in arriving at the diagnosis. They are, in brief: 1. Palpation of the ureter, seeking for a point of tenderness. 2. Palpation of the calculus, by abdominal, vaginal or rectal examination. 3. Cystoscopic examination of the ureteral orifices. 4. Exploratory catheterization of the ureters. 5. *X*-ray examination. The last is the most important form of examination and striking results will often be obtained by careful technic.

The treatment is in the main operative. The removal of ureteral calculi is indicated at an earlier stage than the removal of renal calculi. In the "interval" their removal has a mortality of 2 per cent. Operation is indicated if the calculus remains impacted for several months, even though the symptoms be mild; if the *x*-ray picture shows the long axis of the calculus lying transversely to the axis of the ureter; if there are attacks of intermittent hydro or pyonephrosis, if there are symptoms and signs of periuteritis, if urine is absent from the corresponding ureter on cystoscopic examination; if there are any anuric manifestations.

A Sporadic Case of Edema of the Legs Resembling Milroy's Disease. CHARLES E. MCCLURE. *Northwest Medicine*, February, 1910.

Hereditary edema of the legs was reported by Milroy in 1892. The disease as a rule runs through several generations. The patient here reported knew of no hereditary tendency. He was eighteen years of age. Two years previous he had gone to a chiropodist, who attempted to remove ingrowing toe-nails. As a result there was some phlebitis of both legs. The present trouble dated from the age of twelve, when his mother noticed that his legs were unusually large. There was never any pain except at the time of the phlebitis. During the night the legs seem to go down to nearly a normal size, but after he has been on his feet for about one hour they swell to their full size again. The swelling has never risen above the knees. The skin has never become shiny, glazed or reddened. The calves measured sixteen and one-half inches in diameter. *X*-ray pictures were negative.

The Etiology of Hallux Valgus or the Intermetatarseum. JAMES K. YOUNG, Philadelphia. *The American Journal of Orthopedic Surgery*, February, 1910.

After a brief consideration of the various etiologies ascribed—mechanical, muscular, ligamentous and osseous—the writer describes what he believes to be the causative factor in hallux valgus. The intermetatarseum is a supernumerary bone to be occasionally found between the internal cuneiform and the bases of the first and second metatarsal bones. It may lie between the first and second metatarsal bones; may be fused with the second or first metatarsal or with the internal cuneiform. In addition, Young found a hitherto undescribed type of metatarseum,

namely, one "fused with the first metatarsal bone on its external plantar surface." He feels convinced that the presence of this supernumerary bone is responsible for some cases of hallux valgus. The mechanism is certainly easy of explanation. In one case in which he removed an intermetatarseum, the result was good.

Oblique Conjugate Osteotomies of the First Metatarsal Bone and Phalanx for Hallux Valgus (*Ostéotomies Obliques Conjuguées du 1er Métatarsien et de la 1re Phalange pour Hallux Valgus*). MAUCLAIRE, Paris. *Archives Générales du Chirurgie*, January 25, 1910.

For the mild cases of hallux valgus, the writer believes that any one of a number of operative methods gives satisfactory results. Numerous methods have been described for the treatment of the severe cases, such as cuneiform osteotomy of the first metatarsal or of the internal cuneiform bone. Mauclaire describes his method: Excision of the bursa; ablation of the exostosis on the head of the metatarsal; oblique resection of the head of the first metatarsal along a line from before backward and from within outward; parallel oblique section of the base of the first phalanx; tenotomy and division of all the soft parts inserted into the external sesamoid bone and into the phalanx; suture of the soft parts.

The field of operation must be immobilized for two weeks at the least. Subsequently, the patient must wear a properly fitting shoe.

A Contribution to the Study of Cholangitic Liver Abscesses. (*Beitrag zur Kentniss der Cholangitischen Leberabszesse.*) S. SCHONBERG, Basel. *Deutsche Zeitschrift für Chirurgie*, Vol. 104, Parts 1 and 2.

Schönberg reports one case of multiple abscesses of the liver, which recovered after a very incomplete operative procedure. A female, aged 28 years, came under observation, with a four weeks' history of pain in the upper abdomen, fever, and jaundice; no chills. The liver was found greatly enlarged and tender. At operation it was found studded with numerous abscesses. One was incised, and cloudy, purulent material resembling old pus escaped. This contained no bacteria in spreads or cultures; microscopically, there were numerous leucocytes and degenerated liver cells. The other abscesses were not touched. The gall bladder showed old inflammation and shrinking, as if it had contained a stone. The abdomen was closed.

After operation the course was the same as before, for the first few days. Then the temperature began to drop and the jaundice to disappear. After three months the temperature was entirely normal and the patient was well. The author considers the case one in which the abscesses were already healing when operation was performed.

Absorption of Lead from Retained Projectiles. (*Bleiresorption aus Steckengebliebenen Projectilen*). WIETING & EFFENDI, Stambul, Turkey. *Deutsche Zeitschrift für Chirurgie*, Vol. 104, Parts 1 and 2.

The authors have observed a large number of cases of projectiles that have been retained that consisted, for the most part, of lead. They never saw the cystic granulating sac surrounding the foreign bodies, as described by Marchand. In very rare cases severe lead poisoning results from the spreading of the lead into the surrounding tissues; milder cases of chronic lead poisoning are more common. The writers present two X-ray pictures demonstrating the absorption of the lead particles by the surrounding tissues with the formation of lead salts (?) They believe that all retained lead particles should be removed without waiting for the evidences of poisoning.

Osteoma of the Brachialis Anticus. (*Les Ostéomes du Brachial Anterieur*). VANDENBOSSCHE, Lyons. *Archives Générales de Chirurgie*. Vol. VI., No. 2.

The author presents four interesting cases of this little-understood affection, and then analyses them in conjunction with other cases in the literature. The tumor is always situated at the bend of the elbow, in the substance of the brachialis anticus. They are very irregular in form, and vary in consistency according to their duration and their structure. The symptoms depend upon whether the growth is sessile or pedunculated. In the latter variety flexion and extension at the elbow are more apt to be interfered with. Pronation and supination are usually normal. Pressure upon the nerves is rare. All the cases have followed injury about the elbow-joint. The most prevalent theory as to the formation of these osteomata is a process of ossification that has evolved about a hemorrhage in the muscle. The tumor often disappears spontaneously when the elbow is immobilized. This is therefore the treatment which will be successful in most of the cases.

A Further Report of a New Operation for Arthritis Deformans and Certain Other Deforming Affections of the Hip. F. H. ALBEE, New York, *Surgery, Gynecology and Obstetrics*. March, 1910.

The author has now employed his operation in 16 cases; one patient died 10 weeks after operation, probably from nephritis. The others are cured. The procedure is applicable in advanced cases of arthritis deformans, in extreme paralysis of both hips, in dislocation following suppurative arthritis of infancy, in fibrous ankylosis (instead of Gant's subtrochanteric osteotomy), and in select cases of tubercular arthritis in adults.

The joint is reached by the anterior route, the capsule opened, and the head exposed by forced adduction, without, however, dislocating it. About one-half the upper surface of the head is removed, and a corresponding part of the upper edge of the acetabular cavity is denuded of cartilage. The head of the femur is further exposed by outward rotation and denuded as much as possible of its cartilage. The joint is closed and the limb placed in splints at about 15 degrees of flexion and in extreme abduction. This reduces the shortening and makes locomotion easier (movements in the lumbar spine.)

Fourteen cases are reported in extenso, with accompanying skiagraphs.

Intramural Abscess of the Puerperal Uterus. J. A. SAMPSON, Albany. *American Journal of Obstetrics*, March, 1910.

Sampson reports four cases of this rare condition. Of these, two—intramural abscess of the left and right uterine cornua, respectively—were limited to these sites. In the third and fourth cases the uterine abscesses were only part of a process involving the pelvic connective tissues, ovaries and veins. Of these one recovered. These four cases correspond to the clinical groups usually accepted—local abscesses, and abscesses developing in the course of a general septic process. Probably uterine abscesses are more frequent than is generally known, but most escape observation. In number and distribution abscesses resemble myomata; the uterine cornua, however, being the most common site. The signs are those of the local and general infection; the abscesses feeling like soft myomata. If not operated upon, rupture into the peritoneal cavity, uterus or retro-peritoneal connective tissue is most common, but any adjacent viscus may be the site of rupture. Gradual absorption may take place, however.

In the acute stage general supportive treatment is indicated; when this has subsided do not interfere unless the patient is losing ground. Unless the abscess is readily reached per vaginam an exploratory laparotomy should be performed. In both cases at the uterine horn Sampson drained extraperitoneally by the inguinal route.

Sinusitis Occurring as a Concomitant Complication of Influenza. R. M. MANWARING-WHITE, *Merck's Archives*. March, 1910.

In an epidemic of influenza in 1906-1907 at Norwich, England, White examined the nasal discharges in many cases, finding the micrococcus catarrhalis present in most of them, the Pfeiffer bacillus being demonstrable in none. The method of infection of the nose and accessory sinuses is by inhalation rather than by the blood stream. Air inhaled, for the greater part, passes into the nostrils vertically, and the largest part passes along the middle meatus in which we have the opening of the frontal sinus. Another and smaller stream passes up to the superior meatus and enters the sphenoidal sinus. This latter stream is very much slower than the former. Thus it is that the

frontal sinus is more liable to infection than the other accessory cavities.

The symptoms of an inflammatory condition of the accessory sinuses of the nose are considerably modified according as the ostium of the cavity remains patent or becomes closed at times from swelling of its mucous membrane. In the former case a spontaneous cure results, while in the latter there is retention and consequent aggravation of symptoms. The author has been able to demonstrate in a few cases on percussion a distinct dull note on the affected side, as compared with the marked resonance of the bone on the healthy side. In aggravated cases, there was slight edema and redness of the skin over the affected sinus.

Infection of the sphenoidal sinus seldom occurs without infection also of the posterior ethmoidal cells. The pain is mainly periodic and referred to the occipital region. The discharge passes into the superior meatus and from there into the pharynx. Conjunctivitis and edema of the eyelid may occur and there may be total loss of vision.

Given a case of influenza, if there is unilateral nasal discharge with periodic headache coming on at the same hour each day, one may safely conclude that he has to deal with a suppuration in one of the accessory sinuses of the nose. To differentiate the sinus involved, the locality of the pain is of great importance in giving a clue to the seat of infection. The prognosis in cases of influenzal infection is good, the majority of the cases getting well in a week to ten days. The least favorable cases are those where free drainage of the sinus is hindered by some form of nasal obstruction.

Report of the Case of Rupture of the Membrana Tympani While Using a Telephone. R. F. KOETTER. *The Medical Fortnightly,* March 10, 1910.

The patient was a stenographer, thirty-five years old, who gave the following history: While responding to a telephone call, on placing the receiver close to the left ear, she felt a popping sensation, followed by pain and tinnitus. She also noticed impairment of hearing in this ear. Examination revealed some dried blood in the canal and on the membrane at the site of rupture. There was a tear in the posterior inferior quadrant. Pain had ceased one hour after the injury was received. By inflation of the ear and appropriate treatment, normal hearing resulted in six weeks.

Jonnesco's Method of Spinal Anesthesia. GOETHE LINK. *Indianapolis Medical Journal,* March, 1910.

Statistics show that accidents are more frequent and that the mortality is higher in spinal anesthesia than in other anesthesia. The danger is due to the paralyzing effect the injected substance occasionally exerts upon the respiration. It has been found that, to a certain extent, the anesthetic material can be localized in its action. By making the injection low, as in the lumbar region, and by keeping the head and shoulders elevated, the effect upon the respiratory centers can usually be prevented. It is supposed that the drug, instead of being diffused upward in the spinal fluid, either remains at the point of injection or from the effect of gravity slowly sinks to a lower level. By confining the action of the drug to the lower part of the cord safety is assured, but anesthesia is also limited to the lower regions of the body.

The author has operated upon three cases with excellent results. One case was a man of 77, whose thigh was amputated high up, who ate a hearty dinner one hour after operation. The writer believes that blindfolding the eyes and stuffing the ears with cotton eliminates a great many disagreeable features of spinal anesthesia.

A Reinforced Plaster Splint. CAPT. ROBERT M. THORNBURGH. *The Military Surgeon.* March, 1910.

After reduction of the fracture in the usual way, the leg is encased in one thickness of absorbent cotton and this held in place by a few turns of roller bandage, applied tightly. A wet plaster roller is now wound round until at least two thicknesses surround the leg. A sufficient length of wire mesh (that furnished for the Army Hospital Corps pouch) is placed along the inner side of the leg and bent over sole of foot to form a stirrup. By cutting a few wires here and there it can be perfectly moulded to the plaster dressing already in place. The outer side of the leg receives a similar strip of mesh, but no stirrup. The strips of mesh should leave a gap of about an inch both in front and rear.

Now, while assistants hold the mesh in place the operator again applies the plaster roller until several layers are outside of the mesh. Plaster is applied by hand in the usual way, but only half as much is used as in the ordinary plaster splint. The dressing is allowed to "set" for several hours and then split with saw or cutting pliers down front and back and along top of stirrup. Two perfectly formed moulds are thus made, which are held in place by adhesive straps or tapes embedded in the plaster. These straps may be tightened as the limb becomes emaciated or the pressure may be exactly regulated, for the splints will neither bend nor break. The patient can move about in bed without danger of disturbing the relations of the fragments. An ambulatory splint made in this manner would be better and lighter than any other form.

In case of compound fracture, and it was such a case when the splint was first used by the writer, the wound is protected by gauze squares of proper size and the cotton brought to edge of same. The roller bandage is applied as before, followed by first layers of plaster. The wire mesh on the same side of leg as the wound is brought only as for as upper edge of future trap door and continues again at opposite edge. Narrow strips are fitted laterally and the plaster roller applied as for simple fracture. After "setting" has taken place the reinforced dressing is split as before and the section on the wounded side bent outward from leg. The door is cut out from the inner surface, the plaster removed and the whole splint sterilized in autoclave or oven if need be. It may then be strapped back in place.

A Study of Pneumoperitoneum, with a Means for Its Diagnosis. W. W. HERRICK, New York. *Archives of Internal Medicine,* March 15, 1910.

Inasmuch as obliteration of the liver dulness has proven an unreliable sign, and is, moreover, present only when the peritoneal cavity contains a considerable quantity of air, the author set out to devise a method which will be more accurate and at the same time more delicate. For this purpose, he recommends a small canula, which has an obtuse end and two lateral openings near the tip. The puncture is more below the umbilicus in the median line or at the external border of the rectus, after preliminary incision of the skin. The canula is attached to a small rubber tube, which in turn is applied to a bent glass tube, the distal end of which enters a flask partly filled with water. With a suction pump a partial vacuum is produced within the flask. If air is present in the peritoneal cavity, this will be noted by the escape of bubbles of gas through the fluid. Experiments on dogs showed that pneumoperitoneum could be diagnosed when only 50 c.c. of air were present, whereas obliteration of liver dulness required the presence of 145 c.c. In one observation on the human being, the author's method proved of value. The author claims that the method is entirely safe.

Fatal Lead Poisoning from the Use of Burow's Solution. W. S. GOTTHEIL, New York. *Journal of the American Medical Association,* March 26, 1910.

A wet dressing of Liquor Burowii, diluted one to eight, was applied to an extensive burn of the face, neck and chest, and dorsum of the hand. Three weeks later symptoms of lead poisoning developed. Despite active measures to counteract the intoxication, the symptoms increased and the patient died in the eighth week.

Burow's solution (liquor alumini acetatis) is made by dissolving potassic alum and "raw" lead acetate in water. If filtered the clear solution should contain no lead. Authorities differ as to whether the solution should be filtered or not. The solution employed was not filtered and contained an abundant precipate. While Gottheil believes that idiosyncracy was a prime factor in his case, he no longer uses Burow's solution in burns.